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GEORGE WHITE SLOAN.

Born at Harrisburg, Pa., June 28, 1835. Died at Indianapolis, Ind., February 15, 1903.

President of the American Pharmaceutical Association, 1879–1880.

PROCEEDINGS

OF THE

AMERICAN PHARMACEUTICAL ASSOCIATION

AT THE

FIFTY-FOURTH ANNUAL MEETING

HELD AT

INDIANAPOLIS, IND., SEPTEMBER, 1906.

ALSO THE

CONSTITUTION, BY-LAWS AND ROLL OF MEMBERS.

BALTIMORE:
PUBLISHED BY THE AMERICAN PHARMACEUTICAL ASSOCIATION.
1906.

INITIAL MEETING AT NEW YORK 1851.
AMERICAN
PHARMACEUTICAL
ASSOCIATION
INCORPORATED AT
WASHINGTON, D. C.
FEB'Y 21.
1888.
ORGANIZED AT PHILADELPHIA-1852.

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THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

The third annual meeting of this Association was held in the city of Indianapolis, Ind., September 4th to 6th, 1906, at the time of meeting of the American Pharmaceutical Association. Five sessions were devoted to the transaction of business, and a joint meeting with the American Conference of Pharmaceutical Faculties was held.

The membership of the National Association of Boards of Pharmacy at present is constituted as follows:

Active Boards.

- Alabama.
- Arizona.
- Arkansas.
- District of Columbia.
- Florida.
- Georgia.
- Indiana.
- Indian Territory.
- Louisiana.
- Maryland.
- Massachusetts.
- Michigan.
- Oregon.
- Ohio.
- South Dakota.
- Vermont.

Associate Boards.

- Idaho.
- Illinois.
- Kentucky.
- Maine.
- Minnesota.
- New Mexico.
- New York.
- North Dakota.
- Oklahoma.
- Pennsylvania.

Active membership is accorded such State or Territorial Boards of Pharmacy as are able under present laws to exchange certificates of registration.

Associate membership is accorded such State or Territorial Boards of Pharmacy as under present laws are not permitted to exchange certificates of registration.

Representatives from nearly all of the above Boards were present at this meeting, and took an active part in the deliberations. The meeting was also attended by a number of representatives of Boards not members of the National Association.

President I. A. Keith, of the South Dakota Board of Pharmacy, presided at each session. His address embodied many valuable suggestions and recommendations, and received the approval of the Association.

The early sessions were devoted, in the main, to the transaction of routine business, such as reading of minutes, reports of standing committees, appointment of special committees, etc.

Later sessions were devoted chiefly to new business, and among the many matters forming subjects for discussion the following will perhaps prove of interest:

(a) In the matter of pharmacists serving in the United States Navy and in the Public Health and Marine Hospital Service action was taken as follows:

"The National Association of Boards of Pharmacy recommends to the various State Boards which interchange certificates the recognition of the pharmacists of the United States Navy and the Public Health and Marine Hospital service, as entitled to receive an interchange of registration certificates, in the same manner as is followed by the various States."

(b) In the matter of providing for interchange of certificates of registration, action was taken as follows:

"That the National Association of Boards of Pharmacy recommend to the Boards constituting its membership the practice of interchange of certificates of registration, whenever permitted by existing laws. Furthermore, that in the case of such States whose laws do not permit interchange, an endeavor be made to secure amendments to existing laws authorizing exchange."

(c) In the matter of seeking establishment of a more uniform method of examination of candidates, on part of the several Boards of Pharmacy, action was taken as follows:

"That there be elected annually five members of this Association to serve on a committee, whose duty it shall be to prepare and submit to the several constituent Boards a set of questions covering the several branches in which candidates for the degree of

Licensed Pharmacist are usually examined. Such questions to be regarded merely in the light of a suggestion."

(d) In the matter of participating in the deliberations of the so-called "Syllabus Committee," action was taken as follows:

"That the chair appoint a member of the Association to serve as its representative, and to act in conjunction with other members of the committee. The chair subsequently appointed Mr. William Bodemann, of Illinois."

(e) In the matter of recommendations to Boards of Pharmacy, adopted by the American Pharmaceutical Association and by the joint conference of Boards and Schools of Pharmacy, action was taken as follows:

"Recommendation No. 1. Adopted without change.

"Recommendation No. 2. Amended to read 18 years, instead of 21 years, as constituting the proper age for granting license as assistant pharmacist.

"Recommendation No. 3. Tabled.

"Recommendation No. 4. Tabled.

"Recommendation No. 5. Tabled.

"Recommendation No. 6. Amended by striking out all reference in the matter of allowing credit for successfully completed courses in approved pharmaceutical schools.

"Recommendation No. 7. Amended by striking out all reference to high school work, and inserting in place 'grammar school graduation.'

"Recommendation No. 8. Adopted without change.

"Recommendation No. 9. Adopted without change.

"Recommendation No. 10. Adopted without change.

"Recommendation No. 11. Amended by striking out the words 'by a committee of this conference.'

"Recommendation No. 12. Tabled.

"Recommendation No. 13. Adopted without change."

While, as will be noted, the Boards failed to ratify each and every recommendation submitted, the gulf between the Boards and Faculties is not nearly as wide as it was expected to be. In fact it can truly be said that this discussion has been productive of much good in more ways than one.

It certainly has sharply defined the points of difference between the two bodies, both of which, as must be admitted, are animated by an honest desire to better and elevate the profession of pharmacy. It is therefore reasonable to hope that in the very near future all differences of opinion will cease to exist.

While the original purpose of the National Association of Boards of Pharmacy was the establishment of an interchange of certificates of registration between the several Boards, it soon became apparent that such interchange could not be established without more uniformity in the matter of examination of the applicant for license. Therefore the question of educational requirements to be imposed upon a candidate prior to admission to examination demands its share of attention.

OFFICERS FOR 1906–1907.

President, F. C. Godbold, New Orleans, La.; 1st Vice-President, F. A. Hubbard, Newton, Mass.; 2d Vice-President, C. B. Woodworth, Ft. Wayne, Ind.; 3d Vice-President, Kittie W. Harbord, Salem, Ore.; Secretary-Treasurer, Geo. C. Diekman, New York City, N. Y.

EXECUTIVE COMMITTEE.

F. B. Lillie, *Chairman*, Guthrie, Okla.; John D. Muir, Grand Rapids, Mich. Lewis Flemer, Washington, D. C.; President and Secretary-Treasurer, *ex-officio*.

THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES.

This body, which has for its object the promotion of the interests of pharmaceutical education, was organized at Richmond, Va., May 9, 1900, and, according to Article 9 of its Constitution, is directed to meet annually at the same place as, and coincident with the annual meeting of, the American Pharmaceutical Association.

Seven meetings of the Conference have been held, as follows: Richmond, Va., 1900; St. Louis, Mo., 1901; Philadelphia, Pa., 1902; Mackinac Island, Mich., 1903; Kansas City, Mo., 1904; Atlantic City, N. J., 1905; Indianapolis, Ind., 1906. The usual joint session of the Conference with the National Association of Boards of Pharmacy was held, and the Executive Committees of the two bodies were instructed to prepare a suitable program for the following year.

A National Syllabus Committee of 21 members, representing Boards and Colleges of Pharmacy, was provided for, whose function it shall be to outline a minimum course of study for the guidance of Colleges of Pharmacy and State Boards of Pharmacy. Willis G. Gregory was elected Chairman and Henry L. Taylor Secretary of this Committee.

Since organization of the Conference the office of President has been filled by the following well-known educators: A. B. Prescott,* of Ann Arbor, Mich., 1900–1901; Jos. P. Remington, of Philadelphia, Pa., 1901–1902; Edward Kremers, of Madison, Wis., 1902–1903; H. H. Rusby, of New York, N. Y., 1903–1904; Geo. B. Kauffman, of Columbus, O., 1904–1905; H. M. Whelpley, St. Louis, Mo., 1905–1906; J. H. Beal, Scio, O., 1906–1907. The officers of the Conference for the year 1906–1907 are: President, J. H. Beal, Scio, O.; Vice-President, J. T. McGill, Nashville, Tenn.; Secretary-Treasurer, J. O. Schlotterbeck, Ann Arbor, Mich. *Executive Committee*, W. A. Puckner, Chairman, Chicago, Ill.; Wm. M. Searby, San Francisco, Cal.; H. H. Rusby, New York, N. Y.; H. P. Hynson, Baltimore, Md.; F. J. Wulling, Minneapolis, Minn.

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Albany College of Pharmacy, Dept. of Union University, Albany, N.Y.
Brooklyn College of Pharmacy, Brooklyn, N. Y.
Buffalo College of Pharmacy, Buffalo, N. Y.
California College of Pharmacy, Dept. of University of Cal., San Francisco, Cal.
Chicago College of Pharmacy, Dept. of University of Ill., Chicago, Ill.
Cleveland School of Pharmacy, Cleveland, O.
University of Iowa College of Pharmacy, Iowa City, Iowa.
University of Kansas School of Pharmacy, Lawrence, Kan.
Louisville College of Pharmacy, Louisville, Ky.
Maryland College of Pharmacy, Dept. of University of Md., Baltimore, Md.
Massachusetts College of Pharmacy, Boston, Mass.
University of Michigan School of Pharmacy, Ann Arbor, Mich.
University of Minnesota College of Pharmacy, Minneapolis, Minn.
National College of Pharmacy, Washington, D. C.
New York College of Pharmacy, Dept. of Columbia University, New York, N. Y.
Northwestern University School of Pharmacy, Chicago, Ill.

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* Deceased.

Ohio State University College of Pharmacy, Columbus, O.
University of Oklahoma Dept. of Pharmacy, Norman, Okla.
Philadelphia College of Pharmacy, Philadelphia, Pa.
Pittsburg College of Pharmacy, Dept. of Western University of Pa., Pittsburg, Pa.
Purdue University School of Pharmacy, Lafayette, Ind.
Scio College Dept. of Pharmacy, Scio, O.
St. Louis College of Pharmacy, St. Louis, Mo.
Vanderbilt University Department of Pharmacy, Nashville, Tenn.
University of Washington School of Pharmacy, Seattle, Wash.
University of Wisconsin School of Pharmacy, Madison, Wis.
Total, 27.

AUTHORIZED AGENTS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Appointed by the President in compliance with the following resolutions:

Resolved, That the President be directed to appoint authorized agents, where needed in the different States, for the collection of dues, distribution of the Proceedings, etc.; such agents to be designated by the Treasurer and Permanent Secretary of the Association, and a list of the agents to be published in the Proceedings. (Passed at Baltimore, 1870.)

Resolved, That the President of this Association be requested to appoint, in every locality where more than three members reside, a local agent, whose duty it shall be to aid the Treasurer in the collection of members' dues in his section, and to procure new members by placing before the pharmacists, and others eligible to membership, the great advantages that they will derive from associating themselves with this body. (Passed at Indianapolis, 1879.)

Resolved, That whilst it is desirable that the authorized agents shall at all times render their accounts as promptly as convenient, it is especially to be desired that they render a complete account to the Treasurer of such moneys as are in their hands on the first day of August and December in each year, in order that the Treasurer may be able to make his yearly accounts as full as possible. (Passed by Council, 1883.)

Arkansas,	John B. Bond, Main and Fifth streets,	Little Rock.
	William L. Dewoody,	Pine Bluff.
California,	William T. Wenzell, 1998 Ocean Blv'd,	San Francisco.
Dist. of Columbia,	Walter G. Duckett, 22d st. and Penna. ave.,	Washington.
Connecticut,	John K. Williams, 391 Main street,	Hartford.
	Warren A. Spalding, 19 Church street,	New Haven.
Delaware,	Herbert K. Watson, 803 Market St.,	Wilmington.
Georgia,	Robert H. Land, 812 Broad street,	Augusta.
	Thomas A. Cheatham, Mulberry & 3d Sts.,	Macon.
Idaho,	David E. Smithson,	Emmett, Canyon Co.
Illinois,	C. S. N. Hallberg, Mich. Blv'd & 12th st.,	Chicago.
Indiana,	Frank H. Carter, 776 Massachusetts avenue,	Indianapolis.
Iowa,	John W. Ballard, 106 West Second street,	Davenport.
	George H. Schafer, 713 Front street,	Fort Madison.
	Silas H. Moore, 525 Fourth street,	Sioux City.
Kansas,	George Leis, 747 Massachusetts street,	Lawrence.
Kentucky,	C. Lewis Diehl, 1346 East Broadway,	Louisville.
Louisiana,	Fabius C. Godbold, 2728 Prytania St.,	New Orleans.
Maine,	Noah S. Harlow, 4 Smith's Block,	Bangor.
	Edward A. Hay, Free and Middle sts.,	Portland.
Maryland,	D. M. R. Culbreth, 1307 N. Calvert street,	Baltimore.

Massachusetts,	S. A. D. Sheppard, 1129 Washington street,	Boston.
	B. Frank Stacey, Thompson Square,	Charlestown.
	James E. Blake, 96 North Second street,	New Bedford.
	Thomas B. Nichols, 178 Essex street,	Salem.
Michigan,	Ottmar Eberbach, 12 South Main street,	Ann Arbor.
	James Vernor, 33 Woodward avenue,	Detroit.
Minnesota,	Wm. A. Frost, cor. Selby & Western aves.,	St. Paul.
Mississippi,	Joseph W. Eckford, Commerce street,	Aberdeen.
Missouri,	James M. Good, 2348 Olive street,	St. Louis.
	George Eyssell, 1036 Union ave.,	Kansas City.
Nebraska,	Autumn V. Pease,	Fairbury.
New Jersey,	Wm. M. Oliver, 132 Broad street,	Elizabeth.
	Hermann Klussmann, Fourth st. & Lafayette ave.,	Hoboken.
	Maxwell Abernethy, 188 Newark avenue,	Jersey City.
	Clarence P. Smith, 861 Broad street,	Newark.
New York,	Charles H. Gaus, 202 Washington avenue,	Albany.
	Rudolf C. Werner, 2592 Atlantic ave.,	Brooklyn.
	Charles O. Rano, 1872 Niagara street,	Buffalo.
	William L. Du Bois, 281 Main street,	Catskill.
	John Hepburn, 103 Main street,	Flushing.
	Harvey G. Goodale, P. O. Box 29,	Jamaica.
	James T. King, Main and South streets,	Middletown.
	John McKesson, Jr., 91 Fulton street,	New York.
	Charles F. Fish, 348 Broadway,	Saratoga.
	Charles W. Snow, 214 Warren street,	Syracuse.
	William Blaikie, 202 Genesee street,	Utica.
North Dakota,	Henry L. Haussamen,	Grafton.
Ohio,	J. U. Lloyd, Court and Plum streets,	Cincinnati.
	Thomas J. Casper, 41 East Main street,	Springfield.
Pennsylvania,	Jacob A. Miller, Second and Chestnut streets,	Harrisburg.
	Joseph L. Lemberger, 5 North Ninth street,	Lebanon.
	Richard M. Shoemaker, Fourth and Race streets,	Philadelphia.
	Philip M. Ziegler, 526 Penn street,	Reading.
	Edward A. Cornell, Fourth and Pine streets,	Williamsport.
Tennessee,	Jas. S. Robinson, Second and Madison streets,	Memphis.
Texas,	Geo. J. F. Schmitt, 507 W. Commerce street,	San Antonio.
Washington,	Henry E. Holmes,	Seattle.
Wisconsin,	Edward Kremers,	Madison.
	John R. Drake, 365 East Water street,	Milwaukee.
Prov. Nova Scotia,	Francis C. Simson, Pentagon Bldg.,	Halifax.
Prov. Ontario,	John A. Clark, E. King street,	Hamilton.

MINUTES

OF THE

FIFTY-FOURTH ANNUAL MEETING.

The Fifty-Fourth Annual Meeting of the American Pharmaceutical Association was held in the city of Indianapolis, Ind., during the week of September 3-8, 1906, with headquarters at the Claypool Hotel, on Illinois and Washington streets. The attendance was good, and the sessions were interesting and instructive. A most satisfactory feature of the meeting was the report of 311 applicants for membership by the General Committee on Membership, a list decidedly larger than that of any previous year, and bringing the total membership up to near the 2,000 mark, the highest point yet reached in the history of the Association. This gratifying evidence of the growth and prosperity of the Association, and its increasing favor with the great body of pharmacists of the country, was heartily appreciated by those who were fortunate enough to be present at the meeting.

FIRST SESSION—MONDAY AFTERNOON, SEPTEMBER 3, 1906.

The first general session was called to order at 3:45 p. m., in the palm-room on the topmost floor of the hotel, with President J. L. Lemberger, of Lebanon, Penna., in the Chair.

The session was opened with prayer by the Rev. Hiram W. Kellogg, of Indianapolis.

The program called for an address of welcome by the Hon. Charles A. Bookwalter, Mayor of Indianapolis, but neither the Mayor nor any representative of his was present, and the Chair called on Dr. George J. Cook, President of the Indiana Medical Association, who welcomed the Association on behalf of that body in terms of great cordiality, at the same time paying an eloquent tribute to the evolution and advancement of pharmacy in the last quarter of a century, since the city of Indianapolis last had the honor of entertaining the American Pharmaceutical Association. To the efforts of this society he attributed much of the success attained in eliminating the crude drugs of the past and substituting for them finished preparations of definite strength, from which the physician could expect definite results, thereby placing in his hands powerful weapons to combat disease, impossible of acquirement in the years agone. He congratulated the Association upon its progressive spirit in keeping fully abreast of the times, for its great advance along all scientific lines, and for its stand for higher education and the gradual elimination of the ignorant from the ranks of pharmacy.

Mr. John F. Hancock, of Baltimore, at request of the Chair, responded in appropriate terms to the address of welcome just made, and said that he wished to remind the doctor that pharmacy was the offspring of the physician, having had its birth in the physician's office, where the first pharmacist was a medical student, there compounding prescriptions and preparations, from which status the art gradually evolved into an independent calling, but still dependent upon the physician, as the physician in turn was dependent upon it. He said that he believed the physician was now recognizing the importance of pharmacy as never before, and that the pharmacist was recognizing more and more that the physician was the one to use the remedies the pharmacist prepared. He closed with a plea for higher pharmaceutical education and qualification as a means of inviting the confidence of the physician and the public.

Mr. Leo Eliel, of South Bend, Ind., warmly welcomed the Association on behalf of the Indiana Pharmaceutical Association, and stated that the first visit of the American Pharmaceutical Association to Indianapolis in 1879 made it possible to organize the Indiana State Association in 1882, which fact made it a particular pleasure to extend a welcome from the State Association at this time. He referred with pride to the enviable position Indiana had taken in education, literature and material development, and referred to Indianapolis as " the central gem in the cluster of beautiful cities with which the State is studded."

Mr. Eugene G. Eberle, of Dallas, Texas, was called on to acknowledge the cordial welcome extended by Mr. Eliel. He said he was accused of not being able to talk about anything but Texas when he was away from home, but would try to avoid that fascinating subject on this occasion. He then proceeded to express appreciation of the kindly words of welcome just spoken, and congratulated the State of Indiana upon her splendid material progress, and particularly her pharmacists upon the advanced position they occupied professionally.

The President here stated he would forego his privilege of delivering his address at this time, and would give the various delegates present as the accredited representatives of other affiliated bodies an opportunity to address the Association.

Under this invitation, Mr. A. M. Roehrig, of the Public Health and Marine Hospital Service of the United States Government, spoke first, and extended the greetings of that Service. He gave assurance that Surgeon-General Wyman was at all times ready and willing to co-operate with the

American Pharmaceutical Association for the welfare and advancement of all matters concerning pharmacy in the different branches.

Dr. Reid Hunt also spoke briefly for the same Service.

Mr. Lyman F. Kebler, as the representative of the Department of Agriculture, extended the greeting of the Bureau of Chemistry in that Department. He congratulated the Association upon the recent action of Congress in the recognition of the National Formulary as one of the standards of the Pure Food and Drug Law, to go into effect January 1st next, and remarked the fact that there was only one other association similarly recognized, and that the Association of Official Agricultural Chemists. He said that the passage of the bill as it went through was a great surprise to everybody, even to those intimately in touch with the Senators and Representatives in Congress, and that he hoped it would be freely discussed at this meeting, for it would be far-reaching in its effects, and his Department would want all the light and information possible to obtain on the subject, in its future working under the new law. The Drug Laboratory was continuing its investigation of cod-liver oil specimens, he said, and they had now some two hundred specimens of liver oils but not all cod-liver; they expected to be able to send out a bulletin during the next year, showing their work along this line. He spoke of the study of methods of assay being conducted, and the work being done in the determination of drugs and the preparations made therefrom. Under the new law, he hoped some of the spurious drugs that had been imported into the country might be kept out, or at least compelled to be labeled what they are.

Mr. Thos. V. Wooten, of Chicago, Secretary of the National Association of Retail Druggists, extended the cordial fraternal greetings of that body. He accorded full credit to the American Pharmaceutical Association for what it had done to attain objects aimed at by both organizations, and said he believed, on the other hand, that full credit was accorded the N. A. R. D. by this Association for honesty of purpose in its efforts to bring about desired results—whatever might be the differences of opinion as to the best methods for accomplishing the important end in view, namely: the improvement of the condition of the pharmacist. He expressed his appreciation of the cordiality with which the delegates from the body he represented had always been received by the American Pharmaceutical Association from year to year, and for the grateful words of commendation and encouragement coming from individual members of this Association. He illustrated by a concrete example the difference in view-point sometimes held by physician and pharmacist, and, applying it to the general situation, spoke for a better understanding between the two National organizations working to the same end, and for emulation in good works, to the end that, through properly-directed effort, the drug business might be rendered a greater source of profit, in the truest, best sense of that term, that the hardships of the pharmacist might be lessened or removed in many instances, and that the occupation of the pharmacist might be made more deserving of the ardent devotion of its followers. Lastly, he said the fact that the best energies of the American Pharmaceutical Association had been devoted to this cause for half a century was a constant stimulus to his organization, spurring it on to more heroic effort.

Mr. William Scott, of Indianapolis, spoke as the representative of the National Wholesale Druggists' Association, and extended the cordial greeting of that body, and welcomed the Association to Indianapolis and the Hoosier State. It was an honor, he said, to have again in Indiana the oldest society organized for the improvement and welfare of pharmacy, whose example had induced the formation of other associations looking to the same end, "none of them having any relationship to a trust." He spoke of the mutuality of interest existing between wholesaler and retailer, and the importance of acting in harmony. He bespoke consideration of the new Pure Food and Drug Law, as this Association had always favored the adoption of every safeguard that could protect the public by insuring the purity of drugs.

In referring to the educational side of pharmacy, which the A. Ph. A. especially represented, he paid a graceful tribute to the life and work of the late George W. Sloan, elected president of this Association at the Indianapolis meeting in 1879.

The Chair said he began to realize that there was a combination or understanding between the Mayor and Mr. Scott, and he would call on Mr. C. S. N. Hallberg, of Illinois, to respond to this address of welcome to Indianapolis and the State of Indiana.

Mr. Hallberg began by recalling some memories of the meeting in Indianapolis in 1879. He well remembered, for example, a pile of cascara sagrada bark on exhibition by Eli Lilly at the meeting-hall on Washington street, which Mr. Lilly explained had been secured at great expense to show the members that there was really such a thing as cascara sagrada, and that the extracts were not made of nux. (Laughter.) Mr. Hallberg threw some verbal bouquets at the city of Indianapolis for her progress in the arts and industries, and upon her magnificent public buildings and monuments. He applauded her as the greatest railroad center on earth, and paid tribute to some of her distinguished men in public life and literature. He said Indiana was unique in having a pharmacist who had operated uninterruptedly for twenty-five years a business which had demonstrated the possibility of conducting a pharmacy without the sale of proprietary or patent medicines. He spoke of the varying conditions affecting pharmacy in a country so vast as ours—conditions varying greatly even within the confines of the state of Indiana—and thought it well for all to remember this fact, and that what will suit one section of the country will not always suit another.

In the absence of Dr. W. J. Robinson, Chairman of the Delegates from the American Medical Association to this body, Mr. M. I. Wilbert, of Philadelphia, spoke as the representative of that organization. He gave a glowing and most encouraging picture of the present attitude of the medical profession towards scientific pharmacy. He was present at the last meeting of the American Medical Association in Boston, and was satisfied that the work that Association was doing, and proposed to do, for pharmacy would mark a new era in American pharmacy. In the light of the present situation, he felt assured that scientific pharmacy had a prospect that it had never had in the past one hundred and fifty years of its existence in this country, for at no time in all this period had the physicians taken such interest in official remedies as they were taking to-day, nor had they at any time realized the importance of practical pharmacy to the science of medicine as they were to-day. It only remained for the individual pharmacists to help along with this work, and spread the knowledge of existing conditions, to work an entire revolution in the practice of pharmacy, and bring about an era of better times for pharmacists, individually and collectively. The American physician, he said, had the highest regard for the American pharmacist, and was ready and anxious to get better acquainted with him.

The President stated that this concluded the list of delegates from national bodies, and that remarks from the delegates from state and other bodies would be deferred to another time, as the hour was getting late.

First Vice-President Chas. Holzhauer, of New Jersey, was then called to the Chair, while the President read his address:

PRESIDENT'S ADDRESS.

Fellow Members of the American Pharmaceutical Association:

A year of more than ordinary interest has been added to the history of our Association as we convene the Fifty-fourth Annual Meeting.

I congratulate you on the progress made, the evidence of our good faith in the principles upon which our fabric was founded, and a fuller realization of the purpose as planned by the illustrious founders. We live to know that the profession is making most rapid advances, the educational standard has been raised, the knowledge of drugs has become more extensive, investigation more exhaustive, and our general equipment more complete. These utterances are no reflection upon the ability or skill of our predecessors. They laid the foundation; we are rearing the structure.

Having fairly entered the fifth decade of existence, it is my purpose, in some way verifying the fact, if possible so to do, to plant, if you please, decade markers of our progress. Many important events in the history of our country, as well as the Association, have transpired since the meeting in 1851. Do you younger men and women think of it, or can you believe it, that at the beginning of our work tallow candles or lard furnished the illumination to help our fathers and mothers in their duties after sunset? A more luxuriant equipment was camphene and a burning fluid composed of camphene or pine-oil and alcohol, one part to four parts, and whale or sperm oil. In the second decade came kerosene or petroleum oil and illuminating gas; and only in the third decade, scarcely more than twenty years ago, the application of electricity as an illuminant was in its infancy.

And now the old-fashioned night-light, the wax taper, is supplanted by the miniature electric lamp.

The telephone was a toy novelty at the first International Exposition in Philadelphia in 1876, while means of transportation, bicycle to auto-car, represent a later period. What is true in the development of these domestic appliances is equally true as to the changes and development in our profession. The first report of the initial meeting in New York in 1851 comprised eleven (11) pages; the Jubilee Volume in the fifth decade, 1902, had over twelve hundred (1200) pages. The coffee mill and more primitive stone grinder in the first decade have given way to the electric motor grinder or mixing apparatus now found in the modern laboratory. The glass lamp-chimney and lye hopper-percolator have been superseded by modern devices of copper, glass and pottery ware necessary to make the product of our large pharmaceutical and chemical industries. From the small assembly halls that accommodated the five schools of pharmacy at our beginning in the first decade to the more or less splendid forty-four (44) colleges of pharmacy now found disseminated in almost every State in the Union, representing the several decades as follows: 1st, one; 2d, five; 3d, six; 4th, eighteen; 5th, fourteen. Let us tarry a moment to grasp the thought that our development along all lines is due very largely to these centers of education. The time-honored shop study where it can be practiced is yet advantageously maintained, but gradually and safely is being cared for by the colleges of pharmacy of the day. The good old-time apprenticeship that cared for the morals as well as the education of the boys and young men in those primitive days has through these several decades almost become extinct, and there is scarcely an argument that will hold any longer in favor of a return to that custom; again the development of the general educational system in this country modifies and moulds every department in its realm, so that the apprentice of fifty years ago would lose his identity were he to be confronted by the boy in the modern pharmacy with its innumerable side lines. The muscle, pestle and mortar have yielded to the mill and drug miller, while the manipulation of the spatula and pill-tile, making pills, powders, etc., in the small back room, is bowing to the supremacy of the commercial laboratorian, deluging the country with train-loads of products representing this fifth decade.

WAR.

It was in the first decade that dark clouds appeared in the horizon. They gathered fast and became denser as they gathered. Some of you remember that on this account one annual meeting was omitted, and during the four years many of our number shelved the pestle and mortar, the pill-tile, spatula and other peaceful implements, put away the famous green baize apron worn by the elite apothecary, and, either by a volunteer service or by the lawful draft or conscription, chose the side in the controversy that appealed to their sense of loyalty; and it is no defamation to place upon record that some of our brightest stars in the pharmaceutical world of that day were among the comrades of the South, whose heroism was attested on many a gory field, and in one instance at least one of our members, in the practice of his professional calling as a manufacturer of a powerful explosive for use in the Confederate service, was blown to atoms in his laboratory in the city of Richmond. It was our friend Joseph Laidley; and his contributions of papers and essays form a record of activity from 1852 to the time of his death in 1862, and make a part of the history of the first decade.

Other disturbances over the world have had peaceful solution during this period; many political and moral problems have been met, but nothing, however, has ever confronted any people upon the face of the globe to be compared with the fratricidal war during the epoch named; and the gallant Sherman was fully justified when he gave utterance to the expression that " War is not heaven."

THE COMMON REMEDIES OF THE DAY.

As we daily handle what are now familiar remedies, it is an impressively interesting fact, that so much of our knowledge of them is confined to the time under review. Consider Glycerin as an important factor in medicine and the arts, whose potent power can soothe and allay the ills of even the most delicate membrane, and is so largely consumed in the manufacture of elegant pharmaceutical products, or made the medium in producing a limitless dynamic force—a very household word and remedy, started on its career in the first decade, first made official in 1850.

Our knowledge of Aniline Dyes, which as a modern industry have assumed such magnitude, and enter so largely into the commerce of to-day, had its beginning in the first decade. A great and important boon to mankind it has been, an equally serious menace to health in its misuse. We wonder how the modern fakir, conscienceless confectioner, baker and jelly-maker, could survive a sudden collapse of this industry.

ANTISEPTICS.

In the third and fourth decades, we became interested in antiseptics, and in development of the principle, we have, as a natural result, bandages, gauzes, cottons, solutions and soaps, all of which have proven a blessing unknown to surgery in the ages preceding. With various application, antiseptics seem to be the great boon to mankind, for their votaries, whilst not claiming impossibilities, do have the thought of the prolongation of life, preservation of health, purity of all things possible (except human life), the destruction of the germ life and many other phases in the economy of sterilization, that place this interesting principle among the most notable of modern blessings. And in passing, we realize how many human lives were lost for want of the knowledge that has come to us since the introduction and development of antiseptic treatment.

DEVELOPMENT OF DIGESTIVE FERMENTS.

In the second decade to one of our own, Dr. Emil Scheffer, as much as any other individual, is due the honor of making possible the development of the value and uses of pepsin and kindred animal and vegetable products that greet the medical world with the elaborate array of numerous preparations of the valuable digestive and the varied forms found in the fifth decade of our existence.

In the third decade two members of this Association conducted experiments with crude petroleum. As a result the paraffin product, petrolatum, its numerous combinations for almost every existing conmercial use, is known to-day, and its place in the Pharmacopœia assured as a most valuable ointment-base.

Pharmacy legislation dates to the second and fifth decades. As early as 1869 we learn that in the State of Georgia a law was enacted intending to confine the practice of pharmacy throughout the State to competent persons. In Pennsylvania also there was a desire for better things in that early day; likewise in New York, but the full consummation of this idea for suitable pharmacy legislation dwells in the fourth and fifth decades.

ANTITOXINS.

Among the most valued and signal blessings of the nineteenth century there is none greater or more potent as an amelioration to mankind than the antitoxin serums in the varied applications as developed during the fourth and fifth decades.

We can only mention the fact, and it is not the province of this address to detail every new thought and its development, but rather to impress the value of our co-operative influence as a part of the history of this venerable body, and without any hesitation give as a conviction that for all these developments marking progress the American Pharmaceutical Association has been a safe custodian to hold, to digest, to eliminate if necessary, and to further develop by work and by research in our laboratories, and then without stint or hindrance broadcast to the world our best gift of knowledge.

PHARMACEUTIC JOURNALS.

With the American Journal of Pharmacy as the pioneer, every decade has furnished pharmaceutic literature, until at this present period there is no land in the universe so replete with a useful pharmaceutic press as ours, fostered and sustained from the first inception by this Association; wisely have we encouraged the press, and in turn, much of the success in course of our progress is undoubtedly due to its close touch with this growing body.

Since the last annual meeting, the eighth revision of the U. S. Pharmacopæia has been published. Like its predecessors it has awakened a new interest and will stand as another marker, indicating progress. It is without question the best product of its kind. As may be expected, all persons are not suited. Widespread interest is manifested; the criticism that has been made upon some of the features introduced, indicates a close and practical study of the book. Such application will afford specialists and critics a timely occasion to ventilate thought and deliver suggestions useful in their way to future revision committees, to whom will be entrusted the duty of Pharmacopœia-making. We voice the sentiment of this Association when friendly criticism is invited.

The committee having performed its duty and given the excellent result, deserves our fullest expression and recognition of their intelligence and self-sacrifice in this contribution to the literary, educational and thoroughly pharmaceutical equipment for the shop and laboratory. Co-operative with this "new book of standards" as it may have been justly named, will possibly be the proposed work of the American Pharmacological Society of recent organization, encouraged by us. Whether our Association is fully prepared for entire affiliation with its plans, will appear in due course, when the overture is presented.

The Bulletin of the American Pharmaceutical Association authorized by your action last year, has had an eventful as well as successful career, marking an epoch in our history. The characteristic energy and personality of the editor is recognized in every number; and we believe its publication should be continued, if its maintenance can be met. We have during the past year realized the benefit hoped for, and we believe that our members gladly welcome each monthly number. You will be fully informed by the Council as to the financial problem involved, relative to its publication, and we express the hope that this forward movement will be carefully guarded.

THE NATIONAL FORMULARY.

The National Formulary published and largely distributed, will, we believe, meet the requirement expected. No comment is necessary—examine for yourself. The Council having fixed a reasonable schedule of prices, every effort should be made to have it circulated freely, that not only the thousands of pharmacists and druggists each may possess a copy, but also the physicians, as well as hospitals, and it is conspicuously our duty to make such special effort. The successful compilation of this excellent book, claims our recognition of the valued service of the chairman of the committee and his associates.

Our relation with the American Medical Association is most gratifying, and the delegation to the Section on Pharmacology and Therapeutics in that body will present a report, we feel certain, of a character calculated to cement us more closely in bonds of fraternity. During the course of the year there has been a very epidemic of ethics, if you will permit the term; many admissions of existing estrangement have been made, and when the physician and the pharmacist met for heart-to-heart conference an evident disposition for a closer fellowship was manifest. This is as it should be. The sin of estrangement is not a one-sided condition, and we commend to the pharmacist in local association, as well as by our national representation, the cultivation of a kindred fellowship that will recognize a proper relation between the prescriber and the dispenser.

Neither profession can afford to lose its identity, and with the wise distribution of the new Formulary and a mutuality of interest in conformity to the standard of the new Pharmacopœia a perpetuation of ethical culture must follow.

MEMBERSHIP.

The general Committee on Membership has been actively at work, and is able to render an excellent account of its stewardship through the strenuous labor of the veteran chairman, Mr. Wm. Mittelbach, who was pleased to continue in such relation during the present administration. Surely this committee performed a loyal service. To win new members requires assiduous and persistent effort. All sections of the land are not good harvest-fields for the enlargement of our Association. We lose sight of the fact that some of the States and Territories are sparsely populated; it is therefore from the large centers that we must draw our accessions.

The experiment of appointing supplemental Committees on Membership was inaugurated as directed, and we hope to have such report as will enable us to determine the continuance or annulment of the plan.

A good work has been inaugurated by the Committee on Organization of Local Branches of the A. Ph. A. Chicago, Philadelphia, Washington, D. C., Baltimore and northern Ohio are in line, and we learn preliminary arrangements have been made in other places. The committee will at least report progress, and we hope will have more to say as to the benefits derived at this early stage of the movement. Apropos, there comes to mind another grave question. It is not my purpose to say much relative to our finances; the treasurer by his annual exhibit will give us all the facts; this only I feel constrained to say: We cannot prosper with our opportunity nor fully measure up to our responsibility without a wise expenditure of money. It is unfortunate that for want of funds we should be handicapped. The current expense account had to be pared, necessary salaries reduced, so that we exist financially from hand to mouth. And our hope rests upon an uncertain philanthropy or a largely increased membership. Having encouragement in the expectation of an unusually large attendance at this meeting, and hoping all may catch the contagion, exciting the chairman of the Membership Committee, let us hope that no halt will be made until every available pharmacist has been elected to membership.

As we move along we must keep in mind however, that there are numerous kindred associations. Almost every state has its Pharmaceutical Association and there can be no question—this condition has interrupted the work of winning and retaining membership. It may be that very soon our whole system will require re-organization, and it will be well for this body to inform itself how other national organizations are maintained. There is much labor exacted from our principal committees and we should be in a position to appropriate funds for use in their work. Your officers should not be required to make any personal sacrifices, nor advance private funds, to serve this body. We fill an important place in the Pharmaceutic world and ought not to be handicapped in this particular.

It was a fortunate period in the fourth decade of our existence, when the annual business claiming our attention, became so large as to cause the division of work among the various Sections. There was no foreshadowing that an error may have been made and that there was in process of incubation an offspring, which in less than a decade, (8 years) would produce an object lesson, many features challenging our admiration and causing us to ponder over the new conditions not met by our Section on Commercial Interests. For some reason this Section is not as inviting as it should be to our fellows who have no ethical objection to taking business gathered by the sale of Proprietary medicines, cigars, soda water etc., for with many of our members the commercial side of pharmacy is most attractive and necessary to make possible their existence. Until the pharmacist and the physician are in closest possible relation, there will be this heterogeneous phase of the retail drug business.

We have not solved the secret of the success of this new agency, which should be the working force in the Section on Commercial Interests, and can only surmise that the boon given by the early entrance into its life, of an inter-active money force, which was well considered philanthropy, bread cast upon the waters, returning to the philanthropist after many days. This agency alone, has made possible the continuance of the N. A. R. D. with its numerous paid officials and agents, and until that force is expended, it might be wise to consider the expediency of abolishing our Section on Commercial Interests, and in place make a Section on Pharmaceutical Faculties and Boards of Pharmacy.

THE NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

It was my privilege to attend the meeting of the N. A. R. D., held in Boston last October, and whilst the delegates appointed to represent this Association will make their report, and without any desire to anticipate what they will say, I feel it to be a just recognition of the courtesy extended your presiding officer, to express admiration for the manner in which the affairs of that body were administered, and to say, that never before was I present at so large a convention of druggists, nor was I ever a witness to such unbounded enthusiasm, as existed in that assembly. They have enlisted in a cause for self-preservation, to conserve values, and with this slogan of inspiration, rally around their motto, "To live and let live," deserving the success for which they are aiming. I feel sure they have the good-will of this Mother Association, who in a large number of our membership, is a beneficiary of the work in which they are engaged. In this connection I also desire to assure you of the fact that the kindly disposition of that body towards our own organization was very manifest when the plan of the William Procter, Jr., Monument Fund was presented for their consideration.

THE PROCTER MEMORIAL MONUMENT.

The heart of the Association is touched by the appeal of our excellent committee led by ex-president John F. Hancock. Earnestly has he labored, and largely by influences promoted by him numerous State Pharmaceutical Associations have lined up to the aid of this committee.

A more honorable and noteworthy object of a monumental character could not have been conceived. Your committee will be prepared to give interesting data. We have learned with great satisfaction that wherever the appeal has reached the ear of the pharmacist the heart was touched. How could it be otherwise as we remember William Procter, Jr.?

By unanimity of action the State Pharmaceutical Associations have accepted the invitation to assist by the appointment of committees. These committees of the State Associations have organized for work, and subscriptions have actively begun. When the object is fully understood and the character and influence of Professor Procter is made plain to the younger pharmacists of our country, there is no reason why the monument should not be erected at an early date, as proposed.

If duty can be made to stimulate the pride of each pharmacist in this great country, the canvass may easily close by the end of 1906. By individual subscription each pharmacist, druggist and chemist may feel a personal pleasure in the erection of the monument.

PHARMACISTS IN ARMY, NAVY, ETC.

The status of the pharmacist in the army, navy and marine hospital service has had a place in our deliberations for a number of years. We have a manifest desire for the proper recognition of the duly qualified pharmacist, as an officer of rank, serving under a warrant or commission. Previous effort has been measurably rewarded in the navy and marine hospital service, whilst in the army we have only a meager hope. The fact that the medical department is but fairly efficient at the present minimum strength of the army, and the means at hand for the intelligent dispensing of medicine seeming to be satisfactory to them, should not in any way deter this Association from making a most persistent effort for the proper recognition; and meagre as may be the hope for the realization of the desire we aim for, we are not yet of a mind to drop further activity. We await with much interest a report of the carefully-selected committee having this matter in charge.

At the United States military camp a school of instruction, located at Mt. Gretna, Pa., easy access to the base hospital, through the courtesy of the medical staff, was accorded your humble servant. What was reported so fully at the last annual meeting by the chairman of the committee, Dr. Payne, may be amplified by a few facts. In justice to the Medical Department in this branch of the service it is a fact that a high-grade pharmacist is not sought for, but he may be an applicant. A course of very thorough examination and preparation, with physical qualification and examination as the primary factor, scholarly attainment, diligent application to a course prescribed in the Army School, and conducted by their own department, will give the final grade of Sergeant First Class, qualified to compound their prescriptions and assume the dispensary responsibility.

I quote Section 32 from the Manual of the Medical Department U. S. A.:

"The examination for the positions of Sergeants and Sergeants First Class will be both oral and written. The Board will investigate and report upon the following: (1) Physical condition; (2) character and habits, especially as to the use of stimulants and narcotics; (3) discipline and control of men; (4) knowledge of regulations; (5) nursing; (6) dispensary work; (7) clerical work; (8) principles of cooking and mess management; (9) hospital corps drill; (10) minor surgery and first aid, including extraction of teeth. Candidates for the position of Sergeant will be required to prepare a full set of papers pertaining to the Medical Department, and to drill a detachment of the hospital corps sufficiently to demonstrate their thorough knowledge of the drill regulations. The written examination will embrace the following subjects: (1) Arithmetic; (2) materia medica; (3) pharmacy; (4) care of sick and ward management; (5) minor surgery and first aid; (6) elementary hygiene. Ten (10) questions will be asked on each subject. Proficiency in penmanship and orthography will be estimated from the papers submitted."

There accompanies this examination a certificate that the examination has been made without recourse to books, memoranda or other sources of assistance.

STATE LEGISLATION.

Much State legislation has been enacted to control the sale of poisonous drugs. There is no uniformity, however, in the several laws. There is a similarity applicable only to State conditions. There can be no inter-communication. Will a national law meet our wants more fully in this ever-widening cosmopolitan country? A more stringent and uniform law based along the lines suggested in the excellent "Model Pharmacy Law," approved by this Association, will fill the need. It is intimated that a national law would be unconstitutional. If this is a fact, how important then should be the care of using our influence to emphasize uniform State legislation. When we learn how easily dangerous and habit forming drugs can be purchased, as indicated by the item of $5,000 in cocaine alone being consumed per week in one city, believing in the importance of this subject, is not this the time to press urgently for the establishment of a National Department of Health and a representation in the Cabinet? May we not join the American Medical Association in such laudable overture? From such a department there could naturally be expected proper recommendations for national legislation, and I commend this subject for your careful consideration.

The so-called "Alcohol Bill," to go into effect January 1, 1907, is not the action that the pharmacist will welcome. The general expectation was not realized as a result of long-deferred national legislation on alcohol. The pharmacist will not be benefitted except as a dealer in merchandise. The tax for pharmaceutical purposes has not been removed, and the denaturizing feature will justly prevent its employment. We must continue the payment of what is without a doubt a most burdensome tax to a large majority of retail pharmacists. Give us free alcohol, or meet us half way. The Committee on Education and Legislation will enlighten us fully on these subjects.

The Pure Food and Drug Law, having passed both houses of Congress and approved by President Roosevelt, we have cause to feel satisfied with the interest taken in the crusade waged against the influences which regard neither the fear of the law nor the health of the people.

As one of the journals has put it: "If the law is enforced as we believe it will be, government inspection will hereafter be scrupulous."

Rules and regulations will be made and the government, through its Pure Food and Drug Commission, will welcome all suggestions from a national body like ours, so that the result of its labor to safeguard the public will be as complete as possible.

Since our last meeting a great calamity, earthquake followed by fire, devastated the city of San Francisco and adjacent California. A large proportion of the population was involved in unspeakable sorrow and loss of property. Included in this number are many druggists and pharmacists, among them members of this association. Untold experiences and harrowing privations followed in the general holocaust. Immediate steps were taken by the drug trade of the country for the general fund and the specific relief of the stricken druggists and drug clerks. Many channels were opened through which relief was sent and a liberal response was made. Your president communicated with them through Prof. William Searby, who lost his library and other valuable effects by this disaster, from whom we learned that an efficient committee had charge of the distribution of relief sent them. It was difficult to secure definite data, and further details as promised, have not been received. We are gratified to know that the expression of sympathy and the more practical expression of money was not lacking in our membership. Both were helpful and exhibited that side of humanity nearest the Giver of all good.

It is also very gratifying to know that the California College of Pharmacy makes the announcement that the "college will open at the usual time and carry on its work just as if nothing had happened." Fortunately the fire did not reach them and only slight damage was done to the building, the principal loss being caused by shaking of the building, breaking of glassware and destruction of some chemicals.

A proper expression of sympathy to our members who are among the sufferers will be opportune at this meeting.

INDIANAPOLIS.

I congratulate this Association in having been favored in the selection of the city in which we assemble for our annual meeting. It is not only centrally located, being noted as one of the great railroad centers in the country; having excellent facilities for the accommodation of a large body; with many beautiful attractions; handsome buildings; large manufacturing interests; substantial banks; pleasure parks; beautiful memorial monument; extensive railway system; and well known as the largest inland city in the country.

We know it is the principal city of a State famous among the States in our Union, having furnished her sons as presidents, vice-presidents and many officers of trust in the army and navy; has given us authors in poetry and prose, yea distinguished among the world's nations have been her sons and daughters.

We are not unmindful as we gather, that one of her most active citizens, in his day, was president of this Association in 1879, meeting with us for the last time in 1902, our late comrade, George White Sloan, pharmacist, soldier and gentleman. We honor his memory as we meet in this city that owes something of its prosperity to him as a good citizen, educator and pharmacist.

In conclusion I wish you all great pleasure as you participate in the business that has called us together, and in the social fellowship arranged for by our excellent committee, so that when we shall have concluded our duties we may feel satisfied and realize that it was indeed good to be here.

The address of the President was heartily applauded.

The Chair called for action on the address, and on motion of Mr. C. B. Lowe, of Philadelphia, it was ordered referred to a committee of three, to be appointed by the Chair, for consideration and report at a later session. The Chair appointed as such committee Messrs. Leo Eliel, of South Bend, Ind.; Joseph W. England, of Philadelphia, and H. A. B. Dunning, of Baltimore.

President Lemberger resumed the Chair.

Opportunity was here given the Local Secretary, Mr. F. B. Carter, to make some announcements as to the necessity of registering and receiving badges, coupon-books, etc., and to explain the program of entertainment. He also called attention to the matter of railroad certificates, and said they could be deposited in the Local Secretary's office at any time now for validation by the authorized railroad agent on Thursday. Mr. Heims, of the Local Committee, also made an announcement as to the exchange of theatrical book tickets for regular theater tickets any time after Wednesday morning.

Mr. I. A. Keith, President of the National Association of Boards of Pharmacy, announced the time and place of the meeting of that body, and invited all to be present. Mr. H. P. Hynson, Chairman of the Committee on Commercial Interests, invited all to be present at the meeting of his Section on Tuesday evening.

The General Secretary called attention to a slight change in the printed program, by which the session of the Section on Commercial Interests set for 10 a. m. Thursday was changed to 3 p. m. Friday, and that of the Section on Practical Pharmacy and Dispensing set for 3 p. m. Friday was changed to 10 a. m. of the same day to meet simultaneously with the Section on Historical Pharmacy.

The Secretary also called the attention of chairmen of committees to the fact that their reports should be ready to-morrow (Tuesday) morning, as they would be called for then, and read and disposed of.

The Chair recognized Mr. Oscar Oldberg, of Chicago, to make a statement, and Mr. Oldberg stated that a number of members of State boards of pharmacy and several of the pharmaceutical schools were present, who had come for the purpose of attending the Joint Conference of Boards and Schools, and moved that all members of boards of pharmacy, teachers in pharmaceutical schools and others, who might be present for the purpose of attending the Joint Conference, be extended the privileges of the floor. This motion was seconded by Mr. L. E. Sayre, of Kansas, and adopted unanimously.

The Chair called for the reading of the minutes of the Council as the next order of business, and Mr. H. M. Whelpley, of St. Louis, Secretary of that body, read the minutes of the second session (those of the first session already published in Proceedings for 1905), held at the Claypool Hotel, Indianapolis, September 2, 1906.

SECOND SESSION OF THE COUNCIL.—CLAYPOOL HOTEL, SEPTEMBER 2, 1906.

Council called to order at 8 p. m. by Chairman Beal with the following members present:

J. H. Beal, F. H. Carter, Chas. Caspari, Jr., Chas. E. Caspari, C. Lewis Diehl, E. G. Eberle, Leo Eliel, F. C. Godbold, J. F. Hancock, H. P. Hynson, Edward Kremers, J. L. Lemberger, Wm. Mittelbach, Oscar Oldberg, Geo. F. Payne, C. A. Rapelye, A. M. Roehrig, S. A. D. Sheppard, H. M. Whelpley.

Secretary Whelpley presented the correspondence of the Council since the last session at Atlantic City, N. J., September, 1905, as follows:

November 3, 1905. The Oklahoma Board of Pharmacy now offers nomination for membership and one year's dues in the A. Ph. A., to the person receiving the highest average at the examination for registration. James Whittet, of Carnegie, Okla., obtained this prize at the October 10 meeting. His general average was 85 per cent.

President Lemberger calls attention to the fact that no provision was made at the Atlantic City meeting for an exhibit at the Indianapolis convention. The president will not appoint a committee on exhibits unless so instructed by the Council. He requests expressions on the subject from the council members.

It is moved by William Mittelbach and seconded by James H. Beal that the General Secretary have printed for the use of the several officers of the Association, letter-heads and envelopes of uniform style, with the names of the regular officers and the chairmen of the committees printed on heading, and in such style and quantity as he, the General Secretary, the President of the Association and the Secretary of the Council may determine.

Motion carried.

It is moved by Charles Caspari, Jr., and seconded by H. M. Whelpley that the sum of thirty dollars be appropriated for lithographic plates of illustrations to accompany the paper of J. O. Schlotterbeck on the "Development and Structure of the Seed Argemone Mexicana," presented at the recent meeting at Atlantic City. The paper is of very little value without the illustrations, which latter can be reproduced in Germany at a much lower cost than here.

Motion carried.

It is moved by S. A. D. Sheppard and seconded by H. M. Whelpley that 3,000 copies of President Beal's address, presented at Atlantic City, be printed for distribution by the Secretary of the Council.

Motion carried.

Applications for membership properly endorsed and accompanied by $5.00, covering the 1905 dues should be mailed direct to the Secretary of the Committee on Membership. Whenever possible, avoid sending personal check, as it costs 15 cent's exchange on each one.

December 18, 1905. Local Secretary Frank H. Carter, of Indianapolis, has followed the instructions of the Association and appointed the Local Committee of Arrangements. His associates are J. K. Lilly, Treasurer, and J. E. Toms, Secretary, with the following as chairmen of the sub-committees:

Finance, W. J. Mooney. Badges and Souvenirs, J. N. Heims. Transportation and Hotels, G. B. Moxley. Receive and Conduct Arrivals, A. Timberlake. Monday Night Reception, Dr. John N. Hurty. Local Interest and Attendance from City, Maurice Schwartz. Attendance from Indiana, Leo Eliel, South Bend. Publicity (Secular Press and Journals), Dr. J. N. Hurty and Leo Eliel. Ladies' Committee, Mrs. Frank H. Carter. Commercial Travelers, H. P. Lynch. Entertainment, H. J. Huder.

Supplementary report of Committee on Exhibition, for the Atlantic City meeting, 1905:

Received from Rentals	$1,113.00
Paid Expenses	100.10
Cash Balance	$1,012.90
Remitted to Treasurer	$1,012.90

October 30, 1905. H. P. HYNSON, *Chairman.*

It is moved by Leo Eliel and seconded by Frank H. Carter that the General Secretary of the A. Ph. A. be directed to notify all publishers of text-books and commentaries that under the motion which was carried in the eleventh session of this Association, held at Kansas City on September 9, 1904, the A. Ph. Association asserts and reserves for its own use, all rights pertaining to and in the copyright of the National Formulary and that such use can only be permitted under such terms and conditions as may be imposed by the Council.

Motion carried.

It is moved by Leo Eliel and seconded by Frank H. Carter that the meeting of the A. Ph. A. to be held at Indianapolis, Ind., September, 1906, be called the "George White Sloan Memorial Meeting" and that the Committee on Program so arrange that one of the sessions of the Historical Section be given up to and for this purpose.

Motion carried.

It is moved by J. H. Beal, seconded by S. A. D. Sheppard, that the sum of five hundred ($500.00) dollars be appropriated for expenses of publishing the Monthly Bulletin, the expenditure of the same to be under the direction of the editor, C. S. N. Hallberg. No previous appropriation has been made to cover this expense.

Motion carried.

Chairman Beal requests a vote on the adoption of the following report:

"The undersigned members of the Council Committee of Three to which was referred the duty of arranging the rate of compensation to be charged for the use of the National Formulary by other publications respectfully report that they recommend the granting to Professor J. P. Remington the right to use in his revised text-book on the Practice of Pharmacy the text of the old or 'second edition' of the National Formulary for the sum of $100.00.

"The right so granted not to extend to the new or third edition of the National Formulary which is to be published during 1906, nor to the use of the second edition of the Formulary in any other publication than the fourth edition of the Practice of Pharmacy now practically completed and ready for issue from the press. In explanation of their recommendation, the undersigned desire to state that they carefully considered the nature of the permission to use the text of the Formulary originally granted to Professor Remington and others, and have also taken into careful consideration the legal rights and obligations of this Association and of the publishers of books making a complete or partial use of the text of the Formulary and in the light of all the facts and circumstances which have come to their knowledge, make the above recommendation, as the fairest, most prudent and most equitable disposition that can be made of the present case."

Report adopted.

January 30, 1906. The chairman requests the members to express their opinions on the subject of the following letter:

Professor J. H. Beal, Chairman of the Council of the American Pharmaceutical Association, Scio, Ohio.

Dear Sir: We understand that a new edition of the National Formulary, issued by your Association, is being prepared and will soon be published. We desire to make application for the use of the text of the new National Formulary in the new edition of the United States Dispensatory soon to be issued, and we respectfully ask that you will communicate at your earliest convenience the terms required by your Association for the use of the text.

Very truly yours, J. D. Lippincott Co. (J. H. R.)

March 14 1906. The following comments on the use of the National Formulary text in commentaries have been received in answer to the request made in Letter No. 3, by Chairman Beal:

E. C. Eberle. Should think that its use by publishers would be worth *at least* half of what the text of the Pharmacopœia is worth to them. We want publicity of the N. F. as much as we do for the U. S. P., and its use in commentaries and text-books is beyond question a means to that end.

Leo Eliel. I shall vote and protest against its use by publishers of text-books excepting under an agreement which would protect us from financial loss. A royalty equivalent to 50 per cent. of the retail price fixed for the N. F. should be the lowest acceptable royalty. I wish to emphasize that any course which will jeopardize our revenue from this source will surely make trouble at the next meeting. There is a likelihood that action regarding Remington's work will cause trouble as it is. I should by all means refuse permission to use on general principles.

J. L. Lemberger. Whilst I do not know what would be a fair price to charge, suggest that Lippincott Co. be asked to make a bid for the use of the text without exclusive privilege. It should not in any way conflict with our action on Leo Eliel Motion No. 5, Letter 2, dated December 18, 1905. Indeed, I believe we should get a good round price from the Lippincott people for the use of this text.

A. M. Roehrig. I am in favor of permitting the use of the text provided the N. F. is published by the Association as formerly if adequate remuneration is received for the privilege; and that the terms are made uniform for applicants for its use.

C. Lewis Diehl. I am decidedly of the opinion that the use, such as has been made heretofore, is reprehensible, and in conflict with the interest of the Association. The use of the text in its entirety, practically as given in the "Formulary," should be prohibited. Permission should be given, however, to reproduce the formulas unchanged, provided they are given under the same headings and in the same way in the body of the text as are the corresponding pharmacopœia preparations. Thus, if the official syrups, tinctures, pills, etc., are given in separate chapters, the N. F. syrups, tinctures, pills, etc., should follow in the same chapter; or, if these are given under the drug from which they are prepared, the corresponding N. F. preparation should follow here. This will distribute the formulas throughout the text, will make them fully available and will give them as much prominence as they should have in such works of reference.

George F. Payne. As a member of the Council and representing, as a part of it, the whole Association, I am very desirous that we should do in this matter just what the majority of the Association wishes done. If the National Formulary were a money-making venture alone, it would probably pay the association best not to allow its use in other publications, but if, as I take it to be the case, the work is gotten up for the good of the whole profession of pharmacy, yet it is expected that we shall have large enough returns from it to pay all expenses involved and sufficient surplus to reimburse the Association in some degree for its time and work outside of actual expenses, with this view of the matter, I think the proper thing for us to do would be to allow the use of the National Formulary in other publications, requiring the payment of a certain percentage royalty on the gross sales of each publication using it.

In this way, the publications with small sales or small price would not be obliged to pay any greater amount in proportion than those with larger sales. The above percentage royalty on gross sales would also be fair to the Association and bring to it a certain proportion of the fruit of its labors to which it is well entitled and would not otherwise obtain. I do not suggest that this royalty be a large one, but very moderate and reasonable, but whatever it is, it should bear alike upon all. If the use of the text is valuable, it is certainly valuable in proportion to the number of copies and price of a work of which it aids the sale. I suggest that we obtain an expression of opinion from those publishers who are likely to use the text in regard to what royalty would be proper upon the gross sales of the works in which it will be used, the gross sales to be based upon gross money sales and not upon the number of copies sold. In other words I suggest a "square deal" for all interests involved.

Chas. Caspari, Jr. Referring to the application of the J. B. Lippincott Co. for permission to use the text of the coming new edition of the National Formulary in the U. S. Dispensatory soon to be issued, as given on page 8 of Council Letter No. 3, I beg to say that in my judgment it will be unwise to grant such permission to any firm or person whatsoever, whether for a money consideration or otherwise. It is but fair to assume that those who apply for permission to use the text do so wholly from motives of personal gain to advance the popularity and sale of their respective publications, and not with the view of aiding the A. Ph. A. The Association in my opinion made a great mistake in 1894 by granting permission, at Ashville, N. C., to everybody for free use of the National Formulary text, and from that time on the sale of the book diminished. The National Formulary is now extensively and favorably known and needs no popularization by having it appear in other books. The A. Ph. A. possesses a valuable asset in the shape of the Formulary and should make as much money out of it as possible by retaining full control of the text and sale of the book.

I feel satisfied that if the new edition be properly advertised and handled it will bring considerable money into our treasury, far outweighing the few hundred dollars perhaps obtainable from parties desiring to use the text. The new edition has been carefully prepared and is now being set in type and cast in plates. As soon as the book is ready for delivery, it should be broadly advertised and its advantages and value brought to the notice of every one of the 40,000 druggists of this country.

If publication of the text of the National Formulary in the U. S. Dispensatory or any other book could in any way add to the financial success of the Formulary, I should not be averse to selling the permission for such use, but it is but natural to assume that every one who buys another publication containing the text of the N. F. will not be likely to buy a copy of the latter book itself. The utmost that could be asked for use of the N. F. text in the U. S. Dispensatory is perhaps $250.00, which would represent the Association's profit on about 500 copies of the Formulary, whereas the Association would thereby be deprived of the sale of several thousand copies to the readers and users of said Dispensatory.

My personal interests might have led me to request Lea Brothers & Co. to ask for permission to use the text of the new edition of the National Formulary in connection with their National Standard Dispensatory, but I have refrained from so doing because in this matter I consider the interests of the A. Ph. A. paramount to my own, and I trust that the Association will be able to derive a handsome income from an undertaking to which many of its members have cheerfully contributed gratis their talents and time.

I should like to make a strong appeal to the members of the Council, after reading the various comments submitted at the request of the chairman, to support proposition (1) submitted by Chairman Beal in this Council letter for their consideration and vote.

Jos. P. Remington. I understand the firm of J. B. Lippincott Company has applied to Council to know the terms on which the text of the new edition of the National Formulary can be published in the forthcoming 19th edition of the United States Dispensatory. While it is well known that I am not a member of the Council, I trust that because I am interested in the United States Dispensatory as well as in the American Pharmaceutical Association, that this communication will not be regarded as out of order.

When the National Formulary was first issued, the American Pharmaceutical Association regarded the publication of the National Formulary in the Dispensatories and text books as a distinct advantage to the Formulary, by causing it to become well known to the majority of the druggists of the United States. There is also no question that some members of the A. Ph. A. believe that the books who use the text of the National Formulary should pay what is known as copyright money for the use of the text. It would seem to the writer that an arrangement similar to that made for the use of the text of the United States Pharmacopœia in similar works would be applicable here, with this difference, that the text of the National Formulary cannot be regarded as of as much value in this connection as the text of the Pharmacopœia. Would it not be fair and just to the Council to settle upon a rate just one-half that required for the use of the text of the Pharmacopœia? This would make the rate for Dispensatories $250.00. There might be some publishers who would be willing to pay a large sum of money, say $1,000.00, for the exclusive use of the Formulary text. In my opinion, this would be contrary to the best interest of the A. Ph. A., and yet it is not difficult to see, from a business standpoint, how the use of the text of the National Formulary could be remunerative to a Dispensatory, if a large sum of money were paid, unless the exclusive right was obtained. The formulas in the National Formulary have not secured the large acceptance throughout the country that it was hoped they would, largely because the book has not been advertised for the last ten years in the pharmaceutical journals, and because the physicians of the country are supplied with elixirs, effervescent salts and most of the preparations in the Formulary, by wholesale houses, who secure the use of their preparations by traveling salesmen who distribute free samples. There are other formularies upon the market, such as the Era Formulary, the Standard Formulary, Fenner's and, of course, the market is an open one for any one to issue a book of formulas, and the important queston arises, what is to the best interest of the American Pharmaceutical Association, taking the whole question into consideration?

So far as the U. S. Dispensatory is concerned, the publishers will, of course, abide by the decision of the Council. I understand, however, that they are not willing to pay what might be termed a large sum of money for the use of the text, and they assume that the Council will fix a definite rate which would be demaded from all Dispensatories and books based upon the extent of the use of such text, and upon a schedule of rates which would apply equally to each Dispensatory using the text.

Of course, it may be the judgment of the Council that the text of the National Formulary shall not be used by any commentary and that the Association reserves to itself the right to publish the text, and certainly the Association can do this if it determines that it is the best business policy to pursue, but as a member of the American Pharmaceutical Association it does not seem to the writer that this would, in the face of the competition from other formularies now published and those which may be published in the future, secure that extended use all over the country which was the prime object in inaugurating this work. There cannot help but be a large sale for the National Formulary if issued at the price of $1.25, and much more revenue could be secured if the work was advertised in the pharmaceutical journals. I trust that this communication will be received in the spirit in which it is sent, that of an earnest effort to reach a just conclusion in the whole matter.

Chairman Beal has read all of the comments and submits the following series of propositions for a vote as to the preference:

(1) That no use whatever of the text of the National Formulary be permitted by dispensatories or works on the practice of pharmacy.

(2) That the use of a part or all of the text of the Formulary be granted to the publishers of dispensatories and works on the practice of pharmacy, in return for a reasonable consideration, which shall not be less than ——— for a single edition of the work in which the use of the text is made.

(3) That the use of the complete text of the Formulary shall not be granted to any person, but that the publishers of dispensatories and other works on pharmacy be permitted, for a nominal consideration, to publish a list of National Formulary preparations, including the titles of the same, percentage of important constituents, therapeutic use and dose. Such publication not to give the working formula for the several preparations, and the right to publish such an epitome to be granted only by a written contract specifying the terms of the agreement and the character of the use to be made.

C. Lewis Diehl. I do not approve designating the next annual meeting as "George White Sloan Memorial Meeting," but I do not object to a memorial session to be held during that meeting.

Jos. L. Lemberger. When I voted yes on the "Sloan Memorial Meeting," I think I understood aright what the meaning of the thought represented. It never occurred to me for a moment that there was to be anything funereal about it. It was rather an honorarium to Indianapolis, the meeting place, as associated with an Ex-President of the Am. Ph. Assoc., and a very active participant during the whole term of his membership up to the last meeting, a few weeks preceding his death.

I know full well that memorial meetings are usually associated in a way that has taken hold of friend Sheppard's thought. The thought of a memorial meeting does not rightly express what the promotor of the plan wished to indicate. It is simply akin to naming our meeting as the National Guard of Pennsylvania or other states, also, I presume, name the camps in their annual encampments. They find a name among the recent distinguished men who have departed. It may be argued that such might prevail among military bodies, but would be entirely out of place with a civic body such as ours is.

I think Motion 6 settles the matter with the historical section, it is to cover one session only, which is to partake of a memorial character, but better expressed in the thought of an In Memoriam character. I feel sure if you would look into the real definition of the two words, you will get my thought.

Charles Holzhauer writes as follows: "The reasons given by Mr. Sheppard appeal to me as very forcible and if it were established as a precedent, all our meetings might be memorial meetings in honor of a former member of the city where held.

I move a reconsideration, having voted in the affirmative.

Motion carried.

Inasmuch as it is desirable to familiarize physicians as much as possible with the new edition of the National Formulary now being set in type, it is moved by Chas. Caspari, Jr, and seconded by H. M. Whelpley that the chairman of the committee on National Formulary be requested to prepare at the earliest possible day an Epitome of the N. F. 3d edition similar to the one published in 1900, so that the same may be ready for sale simultaneously with the Formulary. And that the Committee on Publication be directed to have the Epitome published as soon as the text for same shall have been delivered to them.

Motion carried.

Money for Committee on Membership. It is moved by Treasurer S. A. D. Sheppard, seconded by H. M. Whelpley and approved by Charles Holzhauer, Chairman, Committee on Finance, that the sum of $200.00 be appropriated for the use of the Committee on Membership, the same to be expended under the direction of the chairman, William Mittelbach.

This appropriation is similar to the one made last year. The chairman has been paying the expenses out of his own pocket, as the Council overlooked this appropriation earlier in the year.

Motion carried.

March 30, 1906. Having read the comments on the use of the National Formulary, I desire to make the following substitute motion in place of Motion by Chairman Beal viz.:

"That the right to reprint the National Formulary be given to no one, but that the A. Ph. A. offer for sale to publishers and others the printed unbound forms of the formulary on paper of the size and quality desired by said publishers; that the price for each copy thus sold shall be the retail price, minus the cost of binding and the discount offered to agents."

As trustees of the A. Ph. A., it seems to me that we have no right to do anything else at the present time. If the U. S. Dispensatory has helped to advertise the National Formulary during the latter's infancy, the National Formulary has in more recent years helped to sell the U. S. Dispensatory. This much is certain, that the A. Ph. A. has done much more for the publishers and authors of the U. S. Dispensatory than these gentlemen have ever done for the A. Ph. A.

If the publishers of commentaries and text-books desire to make other use of the National Formulary than has been asked up to this time, it will always be time to consider their wishes.—Edward Kremers.

Action postponed by subsequent motion.

Joseph P. Remington requests Chairman Beal to submit the following to the Council:

"In reference to the Lippincott application for the use of the text of the National Formulary in the United States Dispensatory, the settlement of which question is, I believe, pending before the Council, I respectfully desire to suggest a plan which may meet the approval of the Council.

"1. Permit the use of the text of the National Formulary in dispensatories and other books upon the payment of a copyright sum equal to one-half that paid for the use of the United States Pharmacopœia, provided that the users of the text bind themselves not to publish the said Formulary until six months have elapsed from the date of the issue of that edition of the National Formulary by the Association.

"2. Require such publishers of dispensatories, etc., to agree that they will not publish subsequent new editions of the Formulary without obtaining the consent of the Association and signing an agreement.

"The effect of this proposition would be to secure a large sale for the Formulary in six months' time, and of course this would not prevent the sale of the Formulary by the A. Ph. A. or its agents at any time. When the Association in one year, two years, or at any time thereafter, desires to publish a new edition of the book another edition could be issued, and again, the books desiring to use it could not do so until after six months' sale would be assured to the Association.

"It seems to the writer that the acceptance of this plan would accomplish the object of a large financial return, further the use of the formulas, put the Formulary as nearly as possible upon the plane of authority of the U. S. Pharmacopœia, and secure its proper advertising through publication in dispensatories and similar books."

Whereas, the formation of local branches of the A. Ph. A. in different sections of the country is in the interest of closer fellowship and the furtherance of pharmaceutical interests in general, and such action should meet with the hearty approval of the Council.

It is therefore moved by Charles Caspari, Jr., and seconded by Henry M. Whelpley, that the application of the president of the recently-formed Chicago branch (Oscar Oldberg) for permission to continue the branch in operation be hereby approved. It is further moved that the name of every member of a local branch not already a member of the A. Ph. A. shall be submitted to the Council for election of the Association at large as a member, and that the local branch shall be entitled to a fee of one dollar out of the annual dues, payable for the first year by such members.

Motion carried.

Chicago formed the first local branch of the A. Ph. A. Oscar Oldberg is chairman and W. B. Day secretary. Philadelphia organized Branch No. 2, with Joseph P. Remington chairman and M. I. Wilbert secretary. A meeting was called in Baltimore for March 24 to organize Branch No. 3. The result has not yet been reported to the secretary of the Council.

President Lemberger has named a Special Committee on Local Branches, as provided for in the 1905 report of the Committee on Local Branches. The members are H. P. Hynson (chairman), Baltimore; C. S. N. Hallberg, Chicago, and B. Rosenzweig, New York City.

St. Louis, May 4, 1906. It is moved by Leo Eliel, seconded by Charles Caspari, Jr., that the whole question of the use of the text of the National Formulary by the publishers of the U. S. Dispensatory be postponed until the first meeting of the Council at Indianapolis in September next.

Motion carried.

It is moved by J. L. Lemberger and seconded by J. H. Beal that the following request be granted:

We, the undersigned members of the American Pharmaceutical Association, respectfully ask that you extend to us the privilege of forming a local branch of the American Pharmaceutical Association in the City of Philadelphia, to be known as the Philadelphia Branch of the American Pharmaceutical Association.

Our aim in inaugurating this local branch is to extend and to popularize the objects and the established precedents of the American Pharmaceutical Association, and to secure for pharmacy, and for her votaries and followers the recognition that is rightfully due them for their contributions to the progress and welfare of the human race.

Signed,

J. H. Redsecker,
A. M. Hance,
Wm. R. Warner, Jr.,
Chas. A. Weidemann,
W. L. Cliffe,
Edwin M. Boring,
Jos. L. Lemberger,
Geo. M. Beringer,
Jos. P. Remington,
Geo. W. Davis,
Richard M. Shoemaker,
Geo. B. Weidemann,
Clement B. Lowe,
J. C. Peacock,
Chas. T. George,
M. I. Wilbert,
F. P. Stroup,
E. H. Hance,
William McIntyre,
J. T. Harbold,
Aquila Hoch,
Franklin M. Apple,
Jos. W. England,
Henry Kraemer.

Motion Carried.

In order that the State associations may be invited, as ordered by resolution of the Section of Commercial Interests, to send representatives and take part in the work of that Section next year, and that the committee may know how much time may be given to these delegates, it is moved by Henry P. Hynson and seconded by Chas. Caspari, Jr., that the request of the Section on Commercial Interests, for two sessions at next meeting of the Association, be granted and that the Committee on Program be instructed to so arrange that the opening session of the Section on Commercial Interests will be held at a time when no other Section is in session and that the subsequent session will be held concurrently with the second or third session of the Section on Scientific Papers. It is also moved that the General Secretary be authorized to employ, at as little expense as possible, a local stenographer for the second session of the Section on Commercial Interests and for such other occasions during the meeting as he may deem necessary.

Motion carried.

May 28, 1906. It is moved by S. A. D. Sheppard and seconded by H. M. Whelpley that the Historical Section be requested to arrange an extra session with exercises appropriate for a memorial to the memory of our honored, deceased ex president, George White Sloan, who was a worthy citizen of the great state of Indiana.

The above is offered as a substitute for motion which was reconsidered and is now before the Council.

Motion carried.

Moved by J. H. Beal and seconded by H. M. Whelpley that Messrs. Motter, Taylor, Flemer and Gordon be authorized to organize a local branch of the A. Ph. A., at Washington, D. C., this branch to be conducted in accordance with the constitution and by-laws of the general Association as they now are or may hereafter be amended.

Motion carried.

Moved by H. H. Whelpley and seconded by J. H. Beal that Frederick J. Wulling, of Minneapolis, be authorized to organize a Northwestern Branch of the A. Ph. A. to be conducted under the conditions mentioned in Motion No. 24.

Moved by H. M. Whelpley and seconded by A. M. Roehrig that L. C. Hopp, G. W. Voss, W. H. Haake, Joseph Feil and H. V. Arny be authorized to organize a Cleveland Branch of the A. Ph. A. to be conducted under conditions mentioned in Motion No. 24.

Motion Carried.

Moved by S. A. D. Sheppard and seconded by Charles Caspari, Jr., that an additional sum of $36.00 be appropriated for the account of Badges and Bars.

Motion carried.

Moved by H. M. Whelpley and seconded by A. M. Roehrig that permission be given pharmaceutical journals to re-publish formulas from the new edition of the National Formulary provided that no more than five such formulas be published in any one issue of the journal.

Amended by subsequent motion.

The Section on Historical Pharmacy having overdrawn its appropriation due to the fact that bills for the last year were presented during the present fiscal year, it is moved by S. A. D. Sheppard, and seconded by Charles Caspari, Jr., that an additional sum of $30.00 be appropriated for the said Section.

Motion carried.

Moved by H. M. Whelpley, seconded by J. H. Beal that the Committee on Publication be instructed to furnish the pharmaceutical journals of the United States with advance copies of the National Formulary for the purpose of review, copies to be accompanied by a letter calling attention to the special features in the revised edition of the work.

Motion carried.

The amount appropriated for defraying the expense of the Bulletin of the A. Ph. A. during the present fiscal year being now very nearly exhausted, it is moved by Charles Caspari, Jr., and seconded by S. A. D. Sheppard, that an additional sum of $115.00 be appropriated to cover the expenses of the Bulletin for the month of June. The expenses for succeeding months will be provided for in the annual budget of appropriations to be made by the Finance Committee for the coming fiscal year.

Motion carried.

Moved by H. M. Whelpley and seconded by J. H. Beal that the pharmaceutical journals be given a special discount on the National Formulary in recognition of the publicity given the National Formulary by the pharmaceutical press; this special discount to be decided upon by the Committee on Publication, and the pharmaceutical journals to be informed of this decision as soon as possible.

Motion carried.

Moved by S. A. D. Sheppard and seconded by Charles Caspari, Jr., that the Committee on Publication be instructed to send to the entire retail and wholesale drug trade of the United States a four-page circular setting forth the advantages of the third edition of the National Formulary, and that a sum of money not to exceed $650.00 be appropriated for the purpose of carrying out said instructions, the total expense to be charged to the account of the National Formulary.

Motion carried.

Moved by J. H. Beal and seconded by H. M. Whelpley that the Committee on Program be hereby authorized if, in their judgment the same shall be advisable, to so arrange the program for the Indianapolis meeting that two or more Sections may hold their meetings at the same hour, provided that such simultaneous meetings shall apply only to the second and subsequent sessions of any Section, and provided that the first meeting of any Section shall not be set for the same hour as the meeting of any other Section.

Motion carried.

Moved by H. M. Whelpley and seconded by Charles E. Caspari that Edward Kremers be authorized to make an exhibit of the National Formulary at the June meeting of the American Medical Association in Boston.

The Board of Trustees of the U. S. P. C. has authorized Dr. Kremers to make an exhibit of the Pharmacopœia and have appropriated money to cover the expenses.

Motion carried.

It is moved by H. M. Whelpley and seconded by A. M. Roehrig that the Bulletin of the A. Ph. A. be credited with the profits on all orders for the National Formulary received through the Bulletin.

Motion carried.

June 26, 1906. It is moved by Charles Caspari, Jr., and seconded by H. P. Hynson that Motion No. 28 of Council Letter No. 27 be amended by substituting the word "ten" for the word "five" and the word "month" for the words "issue of the journal," so as to conform with the resolution adopted at an informal meeting of eight members of the Council held at Washington, D. C., April 29.

Motion carried.

It is moved by J. H. Beal and seconded by H. M. Whelpley, that further consideration of Motion No. 36 of Council Letter No. 17 be deferred until the Indianapolis meeting.

Motion carried.

It is moved by J. H. Hancock and seconded by H. M. Whelpley that the name of the late Professor William Procter, Jr., be included in the memorial exercises planned for the Historical Section at the Indianapolis meeting.

Motion carried.

July 12, 1906. Moved by S. A. D. Sheppard and seconded by H. M. Whelpley that any unexpended balance of the appropriation for the Committee on Membership shall *not* be returned to the treasury, but shall be carried over to the next fiscal year for the credit of said committee, in addition to such amount as shall be in the regular annual budget.

Chairman Beal requests a vote on the following budget of appropriations for the year 1906–1907, submitted by the Finance Committee:

Salaries	$2520 00
Proceedings	3000 00

Printing and stationery	300 00
Miscellaneous expenses	200 00
Stenographers	300 00
Badges and bars	80 00
Journals for reporter	35 00
Committee on Membership	50 00
Traveling expenses	200 00
Premium on treasurer's bond	12 50
Insurance	50 00
Certificates	15 00
Section on Scientific Papers	25 00
Section on Education and Legislation	25 00
Section on Commercial Interests	25 00
Section on Practical Pharmacy	25 00
Section on Historical Pharmacy	50 00
A. Ph. A. Bulletin for Ju'y and August	250 00
	$7162 50

In explanation to the foregoing, we have to inform you as follows:

Stenographers: The amount has been increased because the Council has authorized the employment of an extra stenographer for the Indianapolis meeting.

Badges and Bars: This appropriation had to be increased because it will be necessary to have both badges and bars made; the stock is nearly exhausted.

Committee on Membership: This has been reduced because the committee believes $50.00 will be sufficient to meet the expenses of the committee. It does not approve of allowing commissions, for which purpose, a large amount of former appropriations was spent.

Sections: The committee has reduced the appropriations of four Sections, in view of the fact that much of the expense of these Sections, is avoided by the use of the Bulletin. It is thought well to lessen the amount appropriated to each of the older Sections, and give the amount saved to the section on Historical Pharmacy which needs more than the others.

Bulletin: The appropriation made for the Bulletin is simply for the months intervening between this date and the annual meeting when, it is thought, this matter will be again discussed and sufficient appropriatian made to carry on the work for another year.

Hoping our views will win the approval of the Council, we are, with great respect,

Committee on Finance,

NEWARK, N. J., *June 27, 1906.* CHARLES HOLZHAUER, *Chairman.*

Budget adopted.

Chairman Beal requests a vote on the following program, prepared by General Secretary Caspari, Local Secretary Carter and Secretary of the Council Whelpley:

Monday, September 3, 10 a. m., meeting of the Council.

Monday, September 3, 3 p. m., first general session.

Monday, September 3, the Nominating Committee will meet following the adjournment of general session.

Monday, September 3, 8:30 p. m., reception.

Tuesday, September 4, 10 a. m., second general session.

Tuesday, September 4, 3 p. m., session of the Section on Education and Legislation.

Tuesday, September 4, 8 p. m., session of Section on Commercial Interests.

Wednesday, September 5, 10 a. m., session of Section on Education and Legislation.

Wednesday, September 5, 3 p. m., meeting of American Conference of Pharmaceutical Faculties.

Wednesday, September 5, 3 p. m., meeting of the National Association of Boards of Pharmacy.

Wednesday, September 5, 8 p. m., session on scientific papers, lecture by Dr. H. H. Rusby.

Thursday, September 6, 10 a. m., session on scientific papers.

Thursday, September 6, 10 a. m., session of Section on Commercial Interests.

Thursday, September 6, 3 p. m., Joint Conference of Faculties and Boards.

Thursday, September 6, 8 p. m., session of Section on Practical Pharmacy and Dispensing.

Friday, September 7, 10 a. m., session of Section on Historical Pharmacy.

Friday, September 7, 3 p. m., session of Section on Practical Pharmacy and Dispensing.

Friday, September 7, 3 p. m., session of Section on Scientific Papers.

Friday, September 7, 8 p. m., installation of officers.

Friday, September 7, 9 p. m., Historical Pharmacy (memorial session).

Saturday, September 8, 9 a. m., organization of the new council.

Saturday, September 8, 10 a. m., final general session.

Saturday, September 8, 3 p. m., meeting of the council.

Program adopted.

August 20, 1906. It is moved by John F. Hancock and seconded by Charles Caspari, Jr., that the sum of one hundred dollars or as much thereof as may be necessary, be appropriated for the use of the Committee on Procter Monument Fund, to cover certain expenses of printing, etc. The money so used by the committee to be subsequently returned to the treasury out of the funds collected by said committee.

Motion carried.

One hundred and ninety new members have been elected since our last meeting. The year previous we elected 165 and year before last 124.

On motion the above abstract of the correspondence minutes was approved.

Moved by Eberle and seconded by Eliel that Article III of Chaper XI of the By-Laws be stricken out.

Carried.

Moved by Whelpley and seconded by Diehl that a committee of five be appointed to report on an amendment to Article II of Chapter VII of the By-Laws.

Carried.

The Chair named Caspari, Jr., Whelpley, Sheppard, Mittelbach and Kremers to constitute the committee.

The Committee on Local Branches through its chairman, H. P. Hynson, submitted the following amendments to the By-Laws:

(a) By transferring Article I, Chapter XI, to Chapter X and making it Article V of Chapter X.

(b) By transferring Articles II and III of Chapter XI to a new chapter and making them Articles I and II respectively of Chapter XII.

(c) LOCAL BRANCHES.

Article I. Local branches of this Association may be formed wherever it may appear that twenty-five members of this Association, in good standing, will participate, provided that no more than one such branch shall be formed in any one State, province, district or territory, unless the additional branches shall be formed at a point distant one hundred miles or more from any branch already established in the same State, province, district or territory.

Article II. All active or voting members of local branches must be members of this Association in good standing.

Article III. The objects and aims of local branches of this Association shall be the same as set forth in Article I of the Constitution of this body, and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it. And no local branch shall enact any article of Constitution or By-Law in conflict with the Constitution or By-Laws of this Association.

Article IV. Each local branch having twenty-five active or voting members shall be entitled to elect one member every three years, who shall become and continue a member of the Council of this Association for that time.

(d) By striking out the compound word "twenty-three" in the first line of Article II, Chapter VI, and substituting for it the Latin term "ex-officio;" by adding after the word "member" and before the word "nine," same line, the words "a member from each local branch of this Association and," and striking out the words "of whom," same line, and substituting for them the word "other," making the article read:

"The Council shall consist of ex-officio members, one member from each local branch of this Association and nine other members selected from such members as have had at least three years' membership in this Association," etc.

On motion the proposed changes in the by-laws were taken up *seriatim.* Each one was approved and on motion the report as a whole was adopted.

On motion by Payne seconded by Godbold, the committee on publication was instructed to publish in the proceedings the list of payments made by members to the treasurer as provided for in the by-laws.

On motion by Eberle seconded by Whelpley the word "five" was ordered stricken out of article III of Chapter VII, and the word "nine" inserted in lieu thereof.

On motion by Sheppard seconded by Lemberger, it was decided to resume the practice of publishing in the proceedings the list of authorized agents.

Applicants for memberships Nos. 191 to 218 inclusive were duly elected.

On motion by Sheppard seconded by Roehrig, the dues to date of all San Francisco members were remitted.

On motion by Kremers seconded by Payne the subject of membership of Edward P. Smith and Lewis P. Ohliger was referred to the committee on membership.

On motion the question of life membership of John Calvert was referred to the committee on membership.

The report of the auditing committee was read as follows:

To the Council of the American Pharmaceutical Association:

Gentlemen: The committee appointed to audit the accounts of the General Secretary and Treasurer have made a thorough examination and found the books and vouchers correct.

The Secretary has received from the sale of

National Formulary	$734 24
Proceedings	84 76
Semi-Annual Index	353 08
Badges and Bars	64 30
Total	$1,236 38

which has been paid to the Treasurer and his receipts taken therefor

The Treasurer has received from all sources	$9,287 56
Balance on hand June 30, 1905	$4,095 18
Total	$13,382 74
Disbursements	9,372 79
Balance on hand June 30, 1906	$4,009 95

The permanent funds consist of the following

Ebert Fund	$927 96
Centennial Fund	2,095 93
Procter Fund	$14,721 83
Total	$17,745 72

J. F. HANCOCK, *Chairman*,
DANIEL BASE,
A. J. CORNING.

On motion the report was adopted.

On motion the following changes were made in the official program:

The second session of the Section on Practical Pharmacy and Dispensing was moved to 10 a. m., Friday, September 7, and the second session of Section on Commercial Interests from 10 a. m., Thursday to 3 p. m., Friday.

The chairman of the committee on membership, Wm. Mittelbach, spoke on the subject of commissions paid to cover expense of securing new members.

General Secretary Caspari made a verbal report on the revised edition of the National Formulary.

On motion by Caspari seconded by Sheppard the Council decided that no permission be granted to authors and publishers of books to use the text of the National Formulary.

On motion the Council adjourned to September 3, at 10 a. m.

Mr. Caswell A. Mayo, of New York, seconded by Mr. Otto F. Claus, of St. Louis, moved to approve as read. Mr. Francis B. Hays, of New York, wanted to know if he understood the Secretary to announce that no branch association could be organized within 100 miles of another branch, which, if true, would seem to mean that the city of New York would be precluded from organizing a branch, because of the fact that the city of Philadelphia, only 90 miles away, already had one. The Chair explained that as New York was not in the same State as Philadelphia, the provision would not apply. The motion to adopt was then put and carried.

Mr. Whelpley read the minutes of the third session of the Council, held September 3, 1906.

THIRD SESSION OF THE COUNCIL—SEPTEMBER 3, 1906.

Council called to order at 10 a. m. by Chairman Beal. The following answered on roll call:

Beal, Carter, Caspari, Jr., C. E. Caspari, Diehl, Eberle, Eliel, Godbold, Hancock, Holzhauer, Hynson, Kremers, Lemberger, Meissner, Mittelbach, Oldberg, Payne, Rapelye, Roehrig, Sheppard, Whelpley.

The minutes of the second session were read and approved.

Caspari, Jr., chairman of a special committee reported as follows:

Amend Art. II, Chap. VII of By-Laws by adding the following paragraph:

"Any newly elected member upon the payment of the annual dues for the year in which he is elected, shall be entitled to all the publications of the Association that are distributed to its members during the year. Persons elected later than March 1, shall not be *required* to pay the annual dues for that year, but if they do pay such dues they shall receive all the publications to which members are entitled for the year."

S. A. D. SHEPPARD,
CHAS. CASPARI, JR.,
H. M. WHELPLEY,
EDWARD KREMERS,
WM. MITTELBACH.

On motion the report was adopted.

On motion it was decided to print this additional paragraph of Art. III, Chap. VII in red ink on the face of the application blanks.

Chairman Beal presented the following report on the invested funds of the Association:

REPORT OF THE CHAIRMAN OF THE COUNCIL ON THE FUNDS OF THE ASSOCIATION.

Gentlemen of the Council: The funds of the Association of which I am the custodian are at this date, Sept. 1, 1906, as follows:

The Ebert Fund.

On Deposit, Boston Penny Savings Bank		$927 96

The Centennial Fund.

1 Mass. State 3 per cent. Bond, No. 1705	$1,000 00	
On Deposit, Boston Penny Savings Bank	1,110 93	
		2,110 93

The William Procter, Jr. Fund.

1 Mass State 3 per cent. Bond, No. 1701	$10,000 00	
3 Mass. State 3 per cent. Bonds, No. 1702–1703–1704	3,000 00	
On Deposit, Boston Penny Savings Bank	1,916 83	
		14,916 83
Total		$17,955 72

Respectfully submitted, J. H. BEAL, *Chairman.*

On motion the report was received and approved.

The committee on publication submitted the following

REPORT OF THE COMMITTEE ON PUBLICATION.

Mr. Chairman and Members of the Council of the American Pharmaceutical Association:

Your Committee on Publication beg leave to report that the Proceedings of the fifty-third annual meeting have been published and a copy of the same delivered in April of the present year and since that time to every member entitled thereto, according to the Treasurer's accounts, besides the usual number (about 100) of complimentary copies to the honorary members, state libraries, the pharmaceutical press, educational institutions and foreign scientific bodies. Of the total number of books (1950) printed, 346 copies remain on hand in flat sheets, 1539 having been bound in cloth and 65 in paper. It was also found necessary during the past year to bind in cloth 15 copies of the 1903 volume and 50 copies of the 1904 volume of Proceedings, the stock having become exhausted. The cost of publication and delivery for the year 1905–1906 is shown by the following items:

Composition, paper, and press work (1950 copies)		$1,983 17
Binding 1539 copies in cloth (1905) @ 23 cents	353 97	
" 15 " " (1903) @ 23 cents	3 45	
" 50 " " (1904) @ 23 cents	11 50	
" 65 " paper (1905) @ 8 cents	5 20	
		374 12
Expressage and Postage		46 70
Illustrations		34 76
Journals for the Reporter (Foreign)		31 70
Miscellaneous Expenses (Hauling, etc.)		2 50
Salary of the Stenographer		200 00
Salary of the Reporter on the Progress of Pharmacy		675 00
		3,347 95

Your Committee are pleased to be able to report that the new revised edition of the National Formulary has been published. In accordance with instructions received from the Council, 43,580 circulars announcing the publication of the third edition of the National Formulary were sent to all the retail and wholesale druggists of the United States. Orders have been coming in very satisfactorily, and the prediction seems warranted that from 10,000 to 15,000 copies of the book will be sold within a year. At this date the Committee are not in a position to state the exact cost of the book, but a fair margin of profit is assured, and it is hoped that at the close of the fiscal year a handsome balance will obtain. For the Committee, CHAS. CASPARI, JR., *Chairman.*

Baltimore, July 3, 1906.

On motion, the report was adopted.

The Chair named the following Committee on Credentials: Eliel, Eberle and Godbold.

The subject of nominating officers was discussed in an informal manner by Caspari, Jr., Beal, Hancock, Kremers, Oldberg, Sheppard, Roehrig, Whelpley, Hynson, Meissner, Holzhauer.

Chas. Caspari, Jr., submitted the following:

Amend the By-Laws by changing the numbers of Chapters I, II, III, IV, V, VI, VII, VIII, IX and X to Chapters II, III, IV, V, VI, VII, VIII, IX, X and XI respectively, and add another chapter to be known as Chapter I, as follows:

CHAPTER I.

OF THE ELECTION OF OFFICERS.

Article I. A Nominating Committee shall be annually chosen, whose duty it shall be annually, at the meeting, to select candidates for the offices of President, three Vice-Presidents, and three Members of the Council.

Article II. The Nominating Committee shall submit the names of three persons as candidates for each of the offices of President, First Vice-President, Second Vice-President, Third Vice-President, and three Members of the Council. These names are to be submitted by the General Secretary by mail to every member of the Association, together with a request that the member indicate his preference on a ballot enclosed for that purpose, and return the same by mail within one month after adjournment of the annual meeting.

Article III. The ballots received as indicated by the preceding article are to be sent by the General Secretary to a Board of Canvassers, composed of three members to be appointed by the President, who in turn shall certify to the General Secretary the result of the election, after which the latter shall be published in the "Bulletin" of the Association.

Article IV. The officers thus elected by a majority vote of the members of the Association shall be installed at the final general session of the next annual meeting.

Article V. The Reporter on the Progress of Pharmacy, the Treasurer, and the General Secretary shall be elected annually by the Council.

A vote being taken on a motion to recommend these amendments to the Association, the same was declared lost.

The editor of the "Bulletin," C. S. N. Hallberg, submitted the following report:

CHICAGO, *August* 31, 1906.

EXPENSES FOR BULLETIN 8, AUGUST 1906.

Dr.

25,000 envelopes	$27 16	
Printing envelopes	12 50	
Addressing 22,000 envelopes	22 00	
Expressage, two times	2 00	
Postage, 1000 one-cent stamps	10 00	
Postage, 200 one-cent stamps	2 00	
Salary of stenographer	10 00	
Postage	2 75	
Porterage	50	
Postoffice charges	25 33	
Postoffice charges	4 76	
Regan Printing House	337 35	
Postage, 100 two-cent stamps	2 00	
		$458 35

Cr.

Contributions from institutions in Conference of Faculties:

Alabama Polytechnic Institute	$10 00	
Albany College of Pharmacy	10 00	
Brooklyn College of Pharmacy	10 00	
Chicago College of Pharmacy	20 00	
Cleveland College of Pharmacy	10 00	
Iowa University School of Pharmacy	10 00	
Kansas University School of Pharmacy	10 00	
Maryland College of Pharmacy	20 00	
Massachusetts College of Pharmacy	20 00	
Michigan University School of Pharmacy	10 00	
Minnesota University School of Pharmacy	10 00	
National College of Pharmacy	10 00	
New York College of Pharmacy	20 00	
Northwestern School of Pharmacy	20 00	
Oklahoma University School of Pharmacy	10 00	
Philadelphia College of Pharmacy	20 00	
Pittsburg College of Pharmacy	10 00	
Purdue College of Pharmacy	10 00	
Scio College of Pharmacy	10 00	
St. Louis College of Pharmacy	20 00	
Vanderbilt University School of Pharmacy	10 00	
Washington University School of Pharmacy	10 00	
Wisconsin University School of Pharmacy	10 00	
United States Pharmacopœial Convention	100 00	
		$400 00
		$58 35

On motion, the report was received and a vote of thanks tendered the editor.

The report of the committee on college prize certificates was submitted as follows:

SUGGESTED FORM FOR PRIZE CERTIFICATE A. PH. A.

AMERICAN PHARMACEUTICAL ASSOCIATION.

Procter Portrait.

This certifies that..graduate of the class of........of the..of Pharmacy, has been awarded

MEMBERSHIP PRIZE

in the American Pharmaceutical Association, for meritorious work in the branch of ....

Attest: ....

.... *President*

Secretary, ...*School of Pharmacy.*

American Pharmaceutical Ass'n.

We further suggest that these certificates be furnished to the school or donor of prize for two dollars or will be furnished gratis if prize membership covers three years' dues paid in advance.

H. V. ARNY,
LEWIS C. HOPP.

On motion the report was referred to a special committee. The Chair named Hynson, Sheppard and Kremers.

Applicants Nos. 219 to 228 inclusive were presented and on motion duly elected.

The committee on credentials submitted a list of delegates and recommended that the names be published in the Bulletin.

On motion the report was adopted.

On motion by S. A. D. Sheppard, Jos. P. Remington was tendered the privileges of the floor during the sessions of the Council.

The Chair announced the subject of commissions on new members as a subject for discussion. It was discussed by Eliel, Meissner, Godbold, Roehrig, Sheppard.

Moved by Whelpley and seconded by Roehrig that the Council heartily approve of the plan of the committee on membership of granting the sum of one dollar on the application of each new member to the party presenting the application as a means of partially covering the expense of securing new members.

The motion was discussed by Oldberg, Meissner, Kremers. Edward Kremers presented the following resolution as a substitute for the above motion.

Resolved, That the Chairman of the Membership Committee be authorized to draw upon the Treasurer orders for expenses of the committee not to exceed $1.00 for each new member, and be it further

Resolved, That the Chairman of the Membership Committee be authorized to turn over to the local sections, upon application, $1.00 for each new member secured by these sections.

It was discussed by Lemberger, Eberle, Hancock, Mittelbach, Remington, Meissner.

The substitute resolution was adopted.

C. S. N. Hallberg, editor of the A. Ph. A. *Bulletin*, presented the following report:

CHICAGO, *Sept.* 1, 1906.

To the Council:

The following report on the "Bulletin" is presented:

The expenses for the "Bulletin" per month, less receipts:

	1906.	
4,000	January, Bulletin No. 1	$69 86
4,000	February, Bulletin No. 2	34 80
4,000	March, Bulletin No. 3	29 21
4,000	April, Bulletin No. 4	26 56
3,000	May, Bulletin No 5	100 72
3,000	June, Bulletin No. 6	109 94
3,000	July, Bulletin No. 7	94 89
25,000	August, Bulletin No. 8	58 35
	Total	$524 33

Bulletins Nos. 1 to 4 inclusive were printed from the matter in type for the annual report of Proceedings, and the expense here submitted does not include the printing of the "Bulletin," these amounts appearing elsewhere. The "Bulletins" Nos. 5 to 8 inclusive were printed in Chicago, and the expense submitted represents therefore the entire expense of the "Bulletin" for these respective months. The expense of the Pré-Convention August "Bulletin," $458.35, is offset by the contributions from the institutions in the Conference of Faculties, $300, and the U. S. Pharmacopœia Board of Trustees, of $100. Adding the expense of printing "Bulletins" Nos. 1 to 4, will show that there was but little saved by printing the "Bulletin" from the Annual Report matter in type.

Of "Bulletins" Nos. 1 to 4 inclusive, a number nearly equal to that sent to the membership was mailed monthly to persons whose names were furnished by the Membership Committee. Of "Bulletins" Nos. 5 to 7 inclusive about 500 extra were sent to persons whose names were furnished by the local branches. Of "Bulletin" No. 8, the Pre-Convention number, 24,000 were mailed, comprising the pharmacists and druggists throughout the country, in towns containing more than three drug stores.

From 200 to 500 "Bulletins" are reserved from each issue for emergency. Only a few subscriptions at $1.00 per year were received.

Orders for 87 National Formularies were received.

Since the application blank on the last cover page was modified, requests for information how to join the Association are constantly being received, and a number of applications, with the accompanying annual dues, have been recently received.

Respectfully submitted, C. S. N. HALLBERG, *Editor.*

On motion, the report of the editor was received.

On motion, by Chas. Caspari, Jr., the treasurer was requested to present at as early a date as possible a detailed report on the total expenses of the "Bulletin."

On motion, the Council adjourned until 9 a. m. Friday.

Treasurer S. A. D. Sheppard, of Boston, explained that the proposed changes in the By-Laws were not made by the Council, but merely proposed to the Association in general session for adoption, and that they were, under the rule, presented at this session so that they could be acted on at the next session.

The General Secretary moved the adoption of the minutes as read, with the exception of that part referring to the motion which was lost in the Council, viz.: the proposition to submit to the members-at-large the names of candidates proposed by the Nominating Committee for President and other officers, to be voted for by ballot, instead of the present method of election by those members only in attendance upon the annual meetings. He gave as a reason that the motion involving that change was lost in the Council by a narrow margin only. and he thought the Association should be made thoroughly familiar with the proposed amendment, as it was a matter of great importance.

Mr. Leo Eliel seconded this motion, saying he was afraid he had voted wrong on the proposition when it was before the Council, and he wanted a chance to rectify that mistake.

Mr. Geo. F. Payne, of Atlanta, moved as a substitute that the minutes of the Council be approved as read, thus leaving it so that those who attended the annual meetings of the Association should elect its officers, rather than to put it into the hands of those who do not attend the meetings.

Mr. A. M. Roehrig, of Stapleton, Staten Island, seconded this motion.

Mr. Chas. T. P. Fennel, of Cincinnati, and Mr. Sayre, of Kansas, raised the question as to whether the adoption of the minutes of the Council as read would so bind the Association as to preclude future consideration and action upon any point contained in the minutes, the former having reference to commission paid for securing members, and the latter saying he wished to raise a point later. Secretary Caspari expressed his opinion that such ratification of the minutes would be binding as to future action upon the subject matter involved—at least for this year—as a matter of parliamentary construction and usage, and would estop further action on the amendment in questions. Mr. Mayo differed with this view, and so did

Mr. Payne, of Georgia, and Mr. J. H. Beal, of Ohio. Mr. F. W. Meissner, of La Porte, Ind., suggested that the matter go over until to-morrow's session, to give those who had voted against the proposed amendment in the Council time to move for a reconsideration, if desired. This motion had a second in Mr. Hynson, of Baltimore, but it was not put to a vote. Mr. T. J. Bradley, of Albany, N. Y., asked if it was necessary that a change in the by-laws be recommended by the Council before going before the Association in general session, expressing the opinion that if it were necessary the adoption of the minutes would preclude further action, at least for this year. Mr. Whelpley and several other members answered in the negative. The motion of Mr. Payne to adopt the minutes as read was then put to a vote and carried.

Mr. Hynson thereupon offered as an amendment to the by-laws, to be acted on at a subsequent session, the same motion as to the manner of electing officers as that offered in the Council and lost.

The Secretary moved a recess of five minutes, to give the delegations from the various states, territories and provinces of Canada an opportunity to select their representatives upon the Nominating Committee. The Chair declared a recess accordingly. At the end of the recess the Secretary, first explaining that only those already members of the Association were entitled to act on the Nominating Committee, called the roll of the states, territories and provinces, and the Nominating Committee was made up as follows :

Alabama—P. C. Candidus.
Arkansas—Frank Schachleiter, C. K. Hegarty.
Connecticut—Chas. A. Rapelye.
District of Columbia—H. E. Kalusowski, Lewis Flemer.
Georgia—Geo. F. Payne.
Illinois—C. H. Avery, Henry Schaper.
Indiana—C. B. Woodsworth, A. L. Green.
Kansas—L. E. Sayre, F. E. Holliday.
Kentucky—J. W. Gayle, C. L. Diehl.
Louisiana—F. C. Godbold.
Maryland—P. I. Heuisler, Henry Howard.
Massachusetts—J. G. Godding, S. A. D. Sheppard.
Michigan—L. A. Selzer, F. W. R. Perry.
Missouri—O. F. Claus, C. E. Caspari.
New Jersey—H. E. Wrensch, Jr., Chas. Holzhauer.
New York—Thos. P. Cook, Wm. C. Anderson.
Ohio—Albert Wetterstroem, J. H. Beal.
Pennsylvania—C. B. Lowe, M. I. Wilbert.
South Dakota—I. A. Keith, D. F. Jones.
Texas—E. G. Eberle.
Vermont—W. H. Zottman.
Washington—C. W. Johnson.
Wisconsin—Edw. Williams.
Indian Territory—H. D. Kniseley.
Oklahoma—F. B. Lillie.

The President then added the names of the following members to represent the Association-at-large : J. P. Remington, of Pennsylvania ; H. M. Whelpley, of Missouri ; A. M. Roehrig, of New York ; C. S. N. Hallberg, of Illinois ; Thos. V. Wooten, of Illinois.

The Chair announced that the Nominating Committee could meet in the palm-room immediately upon the adjournment of this session.

The Secretary reminded all those having papers for the different Sections that they should give them to the Chairmen of the Sections without delay, so they could be arranged for the Section meetings.

The Chair stated that as the hour was half-past six, it was hardly feasible to take up any further business at this time, and a motion to adjourn to a given hour to-morrow morning would be entertained.

Thereupon, Mr. Claus, of St. Louis, moved to adjourn to 10 o'clock to-morrow (Tuesday) morning; it was so ordered, and the Association stood adjourned accordingly.

Second Session—Tuesday Morning, September 4, 1906.

The second general session of the Association was called to order in the convention hall of the Claypool Hotel, on the eighth floor, at 10 : 35 a. m.

The Secretary read the minutes of the first session, which on motion of Mr. Claus, of St. Louis, seconded by Mr. W. C. Anderson, of Brooklyn, were ordered approved as read.

The Secretary gave notice of certain proposed amendments to the by-laws, to bring them into conformity with the action of the Association last year in regard to the Section on Historical Pharmacy, providing for the working of the new Section, and also the general character of the Section itself. Under the rule, these were laid over to the next session.

The Chair stated that the delegates from the various State associations would be heard from now.

Mr. C. B. Lowe, of Philadelphia, was the first speaker, and presented the greetings of the Pennsylvania Pharmaceutical Association. He stated that they had just celebrated their thirtieth anniversary, and in all that time had had only one secretary and one treasurer—the latter now the honored President of the American Pharmaceutical Association. They had been fortunate enough to obtain a prerequisite law in Pennsylvania, he said, thereby taking a great step in advance. The outlook was getting very much brighter in that State, a condition largely due to the efforts of the N. A. R. D.

The President, speaking as a member of the Pennsylvania Association also, stated that the great success of that association was largely due to the fact that they had followed closely the precepts and example of this the mother Association.

Mr. Henry E. Wrensch, Jr., of Montclair, extended the hearty greetings of the New Jersey Association. He said they hoped to advance in his State as Pennsylvania had done.

Mr. W. C. Anderson, of Brooklyn, extended fraternal greetings and congratulations from the New York State Association. He said they had always taken the American Pharmaceutical Association as a guide, and endeavored to carry out its desires in reference to pharmacy and pharmaceutical education. Referring to the New York pharmacy law, he said he believed it would bring about a better condition in the State, and give to pharmacy men better prepared to enter that field than ever before. Mr. Anderson said that the New York pharmacists were especially proud of the record of usefulness and value to the pharmaceutical profession made by the National Formulary, under the able guidance of this Association in years past, since it had found its beginning in New York State. In conclusion, he said he had heard the suggestion that it was the desire of some of the members to have the Association meet in New York City next year, and while he was not authorized to extend a formal invitation on behalf of the State Association or any local association, he assured the Association of a warm welcome there, and said the State and local associations would show that great spirit of fraternity and love for pharmacy that characterized them, if the Association should decide to come to New York.

Mr. D. F. Jones, of South Dakota, extended the greetings of his State Association. He said that, unlike the State of Pennsylvania, they were continually changing officers in their Association—change being a characteristic of the West—but at the same time they were continually growing. Referring to the remarks of Mr. Anderson, he expressed regret that the State of South Dakota was not yet in a position to entertain the Association; they had plenty of room, it was true, but it was "all out of doors" as yet.

Mr. Otto F. Claus, of St Louis, extended hearty greetings from the Missouri Pharmaceutical Association, and referred to Mr. William Mittelbach, the valued Chairman of the General Committee on Membership of this Association, as an equally valued member and officer of his State Association.

Mr. Frank Schachleiter, of Hot Springs, offered the fraternal felicitations of the Arkansas Association of Pharmacists. He commended the American Pharmaceutical Association for the rapid strides it had made in the direction of higher education for pharmacists. He extended a cordial invitation to the Association to meet in Hot Springs at some future time, and said they would be glad to have the meeting there next year, if the Association did not go to New York, and promised a royal entertainment, and said there would be "a hot time in the waters of the Valley of Vapors."

Mr. Joseph P. Remington, of Philadelphia, here stated that he had a letter from Dr. Solomon Solis-Cohen, of the American Medical Association, that he would like to read in part, if it was the pleasure of the Association, and the Chair assured him of the interest of the members in a communication from this distinguished gentleman and ex-chairman of the Section on Pharmacology and Therapeutics of the American Medical Association. Whereupon Mr. Remington, after stating that one of the greatest movements for the betterment of pharmacy was now in progress, in the closer affiliation of this body with the American Medical Association, and after recounting the history of the formation of the Section on

Pharmacology and Therapeutics and the great importance it had now assumed, declaring that pharmacists are now being respected by the medical profession as never before, read the following from a letter written by Dr. Solis-Cohen to himself from Montreal, under date of August 31st last:

> If I may presume to speak for chemical therapeutics to the representatives of pharmacy, I would say: Gentlemen, I depend on you in my efforts to help my patients to get well. I depend on your knowledge, your skill, your science, your enterprise, but above all, on your fidelity. I trust you. You are my armorbearers as I fight disease. If my spear is dull, my bowstring slack, my arrows unfeathered, my sword rusty, my shield pierced, death awaits them that I would protect. But give me weapons that I can depend upon, and I go into battle hopefully, with the determination to conquer.
>
> The efforts that you and your co-workers are making to restore pharmacy to the rank of learned professions and to advance the status of the pharmacist have my earnest sympathy and my sincere co-operation.
>
> Let us stand together for clean medicine and upright pharmacy; let us oppose quackery, fraud and pretense within as well as without our ranks. Let the American Pharmaceutical Association join the American Medical Association in its determination that the errors of the past shall be corrected, that the interests of the people, the interests of science, shall be our own chief interests, and that all selfish obstructionists shall be silenced or shamed.
>
> Then we can confidently face the future, sure of what is better than the mere achievement of success—the deserving of it.
>
> Signed, SOLOMON SOLIS-COHEN.

The sentiment of the communication just read was heartily applauded.

The President said he was sure the Association joined him in the appreciative feeling he had at the receipt of such a kindly greeting from the body of the American Medical Association, and thought that more than ordinary notice should be taken of it. Thereupon Mr. Albert E. Ebert, of Chicago, moved that the letter be received, and that the thanks of the Association be tendered for the kind expressions of Dr. Cohen. Mr. Ebert then proceeded to discuss the relations existing between physician and pharmacist in the past. He said it was pleasant to think there were some of the foremost thinkers in medicine who were willing to join hands with the pharmacists in the recognition of pharmacy in its proper sphere, but that this was only the ideal condition, not yet practically attained, because of the struggle with the medical profession, as well as that of pharmacy, to make a living. Nevertheless, he criticised the attitude of medicine to pharmacy, which had caused pharmacy to retrograde largely through its influence, especially in the use of proprietary preparations, which had largely displaced those the pharmacist had prepared in years gone by. He welcomed, however, what appeared to be a ray of light upon the unsatisfactory condition prevailing.

Mr. S. A. D. Sheppard, of Boston, took a decidedly more hopeful view of the situation than Mr. Ebert, and reminded him that wherever the sun was shining there was bound to be a shadow. He thought Mr. Ebert had been looking at the shadow rather than the sunlight in pharmacy. As a delegate to the Boston meeting of the American Medical Association, he could say it was an enthusiastic meeting, and he agreed with Mr. Remington that there was reason to rejoice at the prospect of better relations between the medical profession and pharmacy, and believed that the whole trend of things was in the right direction.

Mr. Claus here seconded the motion of Mr. Ebert to receive the communication just read, with the thanks of the Association.

Mr. H. P. Hynson, of Baltimore, suggested that it might be well to bring in at this time the report of the delegates of this body to the meeting of the American Medical Association, of which delegation he was chairman, so that the whole subject might be considered at once. Permission was granted, and Mr. Hynson, stating that the matter of the relations existing between physician and pharmacist was as important to the material welfare of pharmacy as was an action at law by an individual to establish his legitimacy and consequent right of inheritance, presented the following:

REPORT OF THE DELEGATION TO THE SECTION ON PHARMACOLOGY AND THERAPEUTICS, AMERICAN MEDICAL ASSOCIATION.

Mr. President and Fellow Members:

An effect and, it is thought, a very desirable effect, resulting from the publication of an association periodical, is to modify the character of reports to be submitted to the association; a secondary result of furnishing news of association affairs and furnishing it quickly.

Those of you who have read the "Bulletin"—our "Bulletin"—are already in possession of knowledge of much that transpired at Boston, during the recent convention of the American Medical Association, that bore more or less directly upon pharmacy and pharmaceutical practice. While those of you who have taken advantage of the privilege offered to become members of that wonderful organization, which has a direct membership of more than twenty-three thousand and a constituent membership of over sixty thousand, have learned much more through the splendid journal of that Association; have learned of the stupendous amount of work accomplished while its many parts were in session.

It will be difficult to prove that membership in the American Medical Association will not be stimulating and practically helpful to all pharmacists who can secure it and who desire to coöperate with physicians in advancing the science of medicine, including the science of pharmacy, whereby human suffering may be lessened.

Surely it is a source of much gratification to all members of this Association, as it would, without doubt, be to its immortal founders, to know how cordially your delegates were received and how deferentially they were treated. The able secretary of the A. M. A. made reference in his official report to but two communications; one was from a Government department of health, the other was from our General Secretary, advising him of the appointment of this delegation. The chairman of the section to which we were sent was particularly gracious and complimented you by calling upon us as soon as the local address of welcome had been delivered and before he had read his own address as chairman

It may be most emphatically announced that the American Medical Association evidences in its general membership; in its leading spirits; in its officers and in its journal, a broad, earnest and helpful bearing toward pharmacy, as we understand pharmacy; a bearing that is far beyond and above the bearing of a number of so-called independent medical journals—leading journals—albeit they are the "house organs" of publishers and of some special pharmaceutical manufacturer. The American Medical Association, "welcomes" as its section on Pharmacology and Therapeutics has declared, "every endeavor to advance the status of pharmacy as a learned profession and expresses its full sympathy with the efforts of the American Pharmaceutical Association in this direction."

Nearly every paper presented to the Section we attended was of greater or less interest to pharmacists and a number were by our own members. No attempt will be made in this report to discuss these papers in detail; abstracts of all will, no doubt, appear in our next "Report on the Progress of Pharmacy," and will be published in full in the transactions of the section which may be secured in printed form through the secretary—our Hallberg, for the nominal charge of one dollar.

Particular attention is called to the resolutions adopted by the Section on Pharmacology and Therapeutics which appear in the address attached hereto, as well, to the fact that the work of the Council on Pharmacy and Chemistry was heartily endorsed and a special resolution of thanks tendered it by the house of Delegates of the A. M. A. This should be especially pleasing and greatly encouraging to you, ladies and gentleman, because, of the fourteen members of that Council nine are members of this Association and five of these are among our most active workers.

The conclusion is forced upon us that this body, as a body, has not taken quite as active a part in the work of the Council on Chemistry as its importance would seem to warrant. It would seem that it should have the active support of the American Pharmaceutical Association and that much of its work could, with propriety, form a part of the doings of our Scientific Section.

The earnest, consistent and progressive policy of the American Medical Association, looking to the removal of the nostrum evil from medicine and pharmacy, is plainly visible in every part of that organization. Not alone is this antagonism seen in the Council on Chemistry and in the Section on Pharmacology and Therapeutics, but in the great Section on the Practice of Medicine, was it most apparent, and to a lesser degree, in the other sections and in the House of Delegates. The opposition is steadily growing and growing in a manner that will certainly produce an effect; especially, in an educational sense. It would seem proper, therefore, for this Association to clearly announce itself and if it is so disposed, closely affiliate with its sister Association in its work of elimination and elevation, touching this particular subject.

It has no doubt become apparent to you that this is very like a one-man's report and it is only fair to the Chairman's able colleagues to let it be known as such. The excuse for this is the size of the delegation with its members widely separated. Under the circumstances, anything like a body report without a meeting would be impossible and one from a part of the delegation would be, perhaps, more objectionable than a chairman's report; since he alone is responsible for the latter.

Whatever applies to the report, applies with greater force to the address he was obliged to offer. Although the chairman sent a request to each of the ten members for suggestions, he received but three replies and had suggestions from but one of these, Mr. Cook. This will suggest for your consideration the advisability of reducing the number of delegates to three and then requiring this number to consult with each other and make both the address and the report a body transaction.

Having, he hopes, by making the foregoing excuse and suggestions, made himself understood to the Association, the Chairman begs to be allowed to call a moment's attention to the address he made, in part, to the Section on Pharmacology and Therapeutics and submitted as a whole to the Committee on Resolutions of that Section and which appears in the pre-convention number of the "Bulletin." Besides submitting the resolutions of the Chicago Branch, to which special attention is called, in it he made several attempts as follows:

1. To do justice to the American Pharmaceutical Association and make plain its intelligent and consistent action from the very beginning, respecting the several difficulties that still beset pharmaceutical practice in its relation to medical practice.

2. To show that these difficulties were by no means new.

3. To prove that the remedies already tried and variously repeated had failed to cure the trouble.

4. To suggest that the real trouble was the misfortunes of the disowned and neglected child.

5. To offer, as the most promising remedy for pharmaceutical ills, an encouraging recognition coupled with inherent rights and inherited environment, modified, as need be, by healthful but forceful discipline.

6. To make it appear that the only practicable and safe placing for pharmacy—intelligent scientific and ethical pharmacy—is to make it a specialty of medicine proper.

And now, should it appear desirable for the Association to know through this delegation what single line of effort might be made by the Association at this time that would bring about the most helpful results to pharmacy and medicine as well, with respectful deference it might be unhesitatingly and most positively answered, because so plainly patent, that whatever might be done to secure the better, the more creditable practice of pharmacy in hospitals and dispensaries, the better the more comprehensive and more practical teaching of Materia Medica in medical schools, would indeed be the most helpful. This would include, as it should, the teaching of pharmaceutical chemistry and pharmaceutical physics, if these terms are allowable; and it would, best of all, include the teaching of not only the existence of a pharmacopœia but why there is a pharmacopœia, and what it is; the pharmacopœia would not then be the representative of any sect or school of medicine, nor of any medical center. Nor would it be thought a mere text-book that one might possibly learn. Then it would be as it should be, a *comprehensive* standard, the respected *standard*, the refuge of the intelligent, the educated and the true; for let it be remembered that respect for pharmacy will come alone through the actual knowledge of pharmacy's worth.

No more is claimed for all this than that it is the most serious conviction of one person; one who has studied the subject earnestly and calmly without prejudice, and to the very fullest extent of all his abilities.

Begging the Association to fully discuss every action of the American Medical Association, the points of this report and the attached address, so far as they seem to be important, I have the honor to subscribe myself,

Your obedient servant, HENRY P. HYNSON, *Chairman.*

Address to the Section on Pharmacology and Therapeutics:

Mr. Chairman and Gentlemen: To this Section and through it to the General Association and its honorable house of delegates, then on to all the constituent bodies making up the venerable, the honorable and the progressive American Medical Association, we bring the most respectful and cordial greetings of a body, almost as venerable; a body, within its sphere, if you will allow me to say it, quite as honorable; a body, along its restricted lines, quite as progressive—The American Pharmaceutical Association. Born in the same city as your own, only five years later, and having, like the American Medical Association as its fundamental purpose, the betterment of humanity and, like it, seeking the attainment of that purpose through the higher education of its members; through the exposure of fraud; through the development of the science and art of practice; through the intercourse of its members and the publicity of their discoveries, all of which causes us to regard the two guilds as being in close and helpful sympathy with each other.

We assure you these greetings come freighted with our revered Association's very best wishes for the continued prosperity, for the enlarged and enlarging usefulness of your magnificent organization and, especially, for the success of this meeting.

It might be as well, Mr. Chairman and Gentlemen, were I now to consider my mission to you completed and allow you to proceed with your very interesting program. This would, indeed, be most to my liking, and I would follow the leading could I persuade myself that my colleagues did not expect me to do my little best to present some thoughts to you that may possibly conduce to the betterment of all concerned, and did I not know that the large majority of our members regard the sending of this delegation to you, this intercourse with you, a matter of most serious moment.

False, indeed, would I be, were I not to proudly confess myself wholly conscious of the high office I am now holding, and when I question why it is that I am so greatly honored, remembering as I do, how many there are, of those I represent, more worthy and more capable, the answer comes back, "It is because of your great respect and admiration for medicine, coupled with the loyalty and proud love you bear pharmacy." While the answer is helpful, it does not sufficiently reassure me. I am, however, greatly relieved by knowing that my remarks are subject to amendment by other members of this delegation, here present, and to final revision by those we represent. Still, I proceed, with unfeigned humility, and with an embarrassing sense of my responsibility; never before in all my existence did I so earnestly crave power beyond my own, never did I feel that I could use that power to better purpose.

Through the active interest and kind co-operation of a number of prominent physicians of Chicago, the local branch of the American Pharmaceutical Association, in that city, has been enabled to profitably discuss many subjects bearing upon the practice of medicine and the practice of pharmacy, and that organization has requested us to present certain subjects for your consideration which appear at this moment to require careful treatment. These were set forth in expressed belief as follows:

"1. That an effort should be made to clearly define the limitations and respective functions of the practice of medicine and the practice of pharmacy; differentiating as to the rights and privileges to be accorded each, with special reference to dispensing by physicians and prescribing by pharmacists.

"2. That the popular demand for medicines should be met with preparations of the United States Pharmacopœia and National Formulary in preference to proprietary medicines.

"3. That the physician and pharmacist should have joint control of the prescription and that, when the prescriber orders the prescription not to be refilled, such instructions should be observed by the pharmacist.

"4. That physicians should discriminate, as far as possible. in favor of reputable pharmacists and against drug stores which make use of cut-rate methods for imposing on the public."

We commend these propositions to you for discussion and, if in your wisdom, you decide to take them up for that purpose, members of our delegation will, if it seems desirable, present their views respecting them. These subjects belong, however, as we all know, to a class brought forward each year for comment and settlement; difficulties which, in the opinion of many careful thinkers, are the direct and natural product of a condition, a condition dependent upon the uncertain and unfortunate relation in which many medical men hold pharmacy.

The true relation of pharmacy to medicine, therefore, trite as it is, must be the burden of whatever may follow, while coupled with it, will be a specific plea for the general *encouragement* of better relations by local as well as national associations of medical men as well as the individual members. In this connection, it is especially gratifying to us, to be able, while holding the past in close scrutinizing view, to own the existence of more fortunate and more encouraging relationships between medicine and pharmacy than ever before held place in the histories of the two professions. These gratifying conditions, are evidenced in the kind and cordial reception of this delegation of pharmacists; by the acceptance of pharmacists into your association's membership; by the election of pharmacists to office in this Section; by the appointment of pharmacists to place in your Council on Pharmacy and Chemistry; by the almost too generous recognition of pharmacists in the revision of the Pharmacopœia; by the selection of pharmacists as co-editors of the two great encyclopedias of Materia Medica and Therapeutics; by the closer affiliation of physicians with pharmacists in our local branches, recently established.

All of which is most encouraging and promises much for still better things to come; especially encouraging because these better conditions are undoubtedly due to the broad, helpful spirit pervading the American Medical Association, assisted by a similar spirit uppermost in our own Association; a contribution to which we fondly look for the proper placing of true pharmacy and its final recognition as a special branch of medicine. More necessary, for practical reasons, in this country than in continental Europe, because of the impossibility of enacting sufficiently restrictive laws owing to the more liberal principles upon which our government is founded.

It is hoped at this point that you will kindly bear with us while effort is made to clearly prove that the abuses and bad practices about which so much complaint is justly made to-day are only symptoms, old symptoms, as old, indeed, as medicine and pharmacy themselves. They are superficial symptoms that have been treated superficially, and which under favorable conditions may be expected to reappear as long as there remains in the human soul the slightest evidences of Adamic taint. They will be seen in pharmacy so long as the hated charlatan appears in medicine, until the contemptible shyster can no more be found in law, and until the despised apostate ceases to disgrace theology.

At old Salernum, away back in the early part of the seventeenth century, the medical graduate was made to swear that he would not accept commission from the apothecary, while the latter as solemnly made oath that he would not substitute, proving by inference, as does German law and English enactment, that those sins which our fathers in pharmacy so vigorously condemned during the early fifties of the last century were not at all new even then, when those great and good men declared, in 1852, that:

"We hold it unprofessional and highly reprehensible for apothecaries to allow percentage or commission to physicians on their prescriptions, as unjust to the public and hurtful to the independence and self-respect of both the parties concerned."—A. Ph. A. Proc., Vol. I, p. 2.

The practices must have continued, because in 1868 a member asked:

"Whether the Constitution (A. Ph. A.'s) includes the condemnation of apothecaries who allow percentages to physicians, an error which in some localities exists to a considerable extent."—A. Ph. A. Proc., Vol. XVI, p. 103.

In the same year the State of Georgia found it necessary to enact a law providing that:

"If any vender of drugs and medicines, by himself or his agents, either knowingly or negligently furnishes the wrong article or medicine . . . he shall respond in damages."

It is encouraging to note that at the birth of our Association, in 1852, when your own, figuratively, was but a child of five, it was declared that members—pharmacists—"in conducting business at the counter should avoid prescribing for diseases." And it was then announced that:

"We also consider that the practice of some physicians (in places where good apothecaries are numerous) of obtaining medicines at low prices from the latter and selling them to their patients is not only unjust and unprofessional, but deserves the censure of all high-minded medical men."

There seems to have been what we still call "counter prescribing" and "dispensing by physicians" even in those so-called "good old days."

The quotations already made leave no doubt that the practices and conditions to which they refer, and which are claiming our attention to-day, existed in kind, and to a considerable degree, if not to so great a proportionate degree, at least fifty years ago in this our own beloved country, and it is quite within the positive memory of many here present that these abuses have continuously existed and have been continuously discussed for the last twenty-five years. The same may be as accurately stated regarding controversy applying to the refilling and ownership of prescriptions; conditions dependent upon the limited use of official remedies and the exploitation and excessive prescribing of "proprietaries," politely so called; abuses arising from the manufacture, advertisement and sale of fraudulent and secret remedies, testimony regarding the remote prevalence of which is abundantly borne by the following, offered by the East River Medical Association of the city of New York, September 10th, 1867:

"WHEREAS, The attention of this Society has been called to consider the propriety of taking action relative to the practice of druggists renewing the prescriptions of physicians without their written order, thereby injuring very materially the interests of the profession; and

"*Whereas*, In view of the graver and more important consideration that the interests and lives of patients are, in consequence, endangered, we consider it a duty to guard to the utmost of our ability against the liability to mistakes which should be prevented rather than deplored; be it therefore

"*Resolved*, That we respectfully request that no druggist will renew the prescriptions of any physician without due authority for each and every such renewal. Further, we will regard as unworthy of our patronage any druggist who fails to comply with the requirements of these resolutions."

Answer by the American Pharmaceutical Association.

"WHEREAS, The discussion of this important subject has called forth a free expression of opinion from our members, therefore

"*Resolved*, That this Association regards the Pharmacist as the proper custodian and owner of the Physician's prescription once dispensed.

"*Resolved*, That however desirous we may be to accede to the request of the East River Medical Association, the restriction of the Pharmacist to a single dispensing of a prescription without the written authority of the prescribing physician for its renewal, is neither practicable nor within the province of this Association. Nevertheless we regard the indiscriminate renewal of prescriptions, especially when intended for the use of others than those for whom they were prescribed, as neither just to the physician nor to the patient, between whom we stand as conservators of the interests of both, and that such abuses should be discouraged by all proper means."

"The subjects of secret medicines, or quackery, as applied to Pharmacy, together with the course usually followed by quacks, in bringing their nostrums into notice, is becoming yearly more fraught with ill consequences, both to the customers and the apothecaries."—Proc. A. Ph. A., Vol. I, p. 9.

"*Resolved*, That this Association recommend to each State the enactment of such a law as shall require every person engaged in the manufacture and sale of any patent or secret medicine, designed or recommended for exhibition as a remedial agent, to file in the proper office of each State wherein such remedy is offered for sale, a full and complete formula of such remedy, and that under oath."—Proc. A. Ph. A., Vol. II, pp. 16 and 17.

"*Resolved*, That this Association earnestly recommend to our brethren to discourage by every honorable means the use of these nostrums; to refrain from recommending them to their customers; not to use any means of bringing them to public notice; not to manufacture or have manufactured, any medicine the composition of which is not made public; and to use every means which are employed to induce their consumption."—Proc. A. Ph. A., Vol. II, p. 17.

"We also find that an amount equal to the half of all medicines sold, is sold in the shape of nostrums, as will be seen by the returns."—Proc. A. Ph. A., Vol. II, p. 25.

The following is so very appropriate to this period that it appears to be almost the act of prophecy:

"We have received from an esteemed correspondent, a gentleman of education, who, besides being a graduate of medicine, has been for some years zealous in the study and practice of pharmacy, a circular announcing to physicians, though somewhat vaguely, the composition of five different preparations which he makes and sells These are called 'Rose Pectoral,' 'Cream of Camphor' (for external use), 'Worm Syrup,' 'Tooth Wash' and 'Family Pills.' As far as appears, they are good remedies, if judiciously applied; and the same circular contains a certificate, signed by fifteen physicians resident in his section of the State, approving the design and recommending the medicines as worthy of patronage. Now, although these medicines were specially designed to be prescribed by physicians, and were evidently endorsed by respectable practitioners under that impression, they are deposited on sale in distant locations, advertised in the papers and in circulars, with certificates of cures, and the other necessary adjuncts of quackery. Aware of the difficulties thrown in the way of the legitimate practice of pharmacy in distant localities, which are overflowed by quack medicines, we should be loth to condemn an enterprise of this kind, if it could be recommended upon any just principles of ethics; but it must be apparent that there is no real difference between vending medicines which are advertised as cures, whether the recipes be retained as a profound secret by the maker, or be published to physicians in such terms as forbid the preparation being made by another. If physicians and druggists recommend such for the purpose of superseding the ordinary secret medicines, they fail of their object, while they lend their aid to a modified and less offensive, though more insidious form of quackery. No medicine can escape the odium of quackery which is offered as a cure for any disease, without the advice of a competent physician, even if it contains on its label a printed formula for its preparation, much less one which is recommended as containing certain ingredients without any mention of their proportions."—Proc. A. Ph. A., Vol. II, pp. 29 and 30.

"Secret medicines have become more popular in some districts by the extensive use made of them by 'regularly graduated physicians,' who prescribe various 'vermifuges,' 'pectorals,' 'expectorants,' 'alteratives,' etc., which is so good an argument with the patient, that he, next time, tries the nostrum without the doctor."—Proc. A. Ph. A., Vol. II., page 38.

Having, it is hoped, proven that the abuses that vex us to-day are identically the same ones that so sorely tried our forefathers; having, incidentally, shown that the continued condemnation of these abuses and the severe arraignment and semi-ostracism of their perpetrators have failed to lessen, in any great degree, their recurrence and, having, as surely, proven that better conditions have abundantly followed acts of education, of encouragement and affiliation, it should not be difficult for us to select the proper treatment. Yet, treatment is not all that is required; is not the essential. A change in environment is what is most needed; not a doubtful half-way change; not an uncertain change, but one that is positive and decided; one, the very fixing of which will give hope and courage and promise.

The better placing of pharmacy, its restoration to an actual and honorable, even though subordinate, position among the specialties of medicine, under such conditions and requirements, and with such restrictions and curtailments as charity, justice and the exigencies of the times may properly demand, is the environment, the only environment, we respectfully submit, that will insure the permanently satisfactory results to be expected from a continuation of the wise treatment you and your assistant have begun; results that should follow the further application of higher education; extended ethical teachings; more stimulating legislation; better compensation; encouraging recognition; the happy results for which we are all so desirous; the abatement of the abominable abuses, as far as human agents and human abilities may abate them.

It must not be expected that we will corral all, nor even the large majority of those who call themselves pharmacists, within the fold of Pharmaciavera. Neither will true and honorable medicine more easily claim as worthy of its protection all who profess to be physicians; not until the millenium becomes the certain dawn of approaching eternity will this be possible. It will come all the quicker, however, if we will teach more of good living, more of ethics, especially, as they apply to professional life, to the young of our kin and teach it long, that they who learn it of us may teach it to those following, early. Let us make the receptacle fit for the professional knowledge before that peculiar knowledge is acquired, that those who may practice medicine and pharmacy, hereafter, may live up to true principles and not so readily accept conditions which contribute to their convenience and immediate pecuniary advantage. In all professions, ethics are taught last, when they are of least use and after the greatest hindrances to true progress have been offered.

The uncertain anchoring of pharmacy has been offered as the real, the fundamental course of its many driftings, yet, if safe moorings in the harbor of medical professionalism is sought, at once the specter of trade appears and we hesitate. But need we hesitate, when we realize that commercialism, barter and sale is not a part an essential of pharmaceutical practice but simply *incidental* to it, as commercialism is incidental, in a greater or less degree, to every profession under the sun. Nor does this association of commercialism necessarily detract from the honor of professionalism, which in honorable practice strives to give unto others the fullest benefit of its every attainment.

In this plea for a quick and final settlement of pharmacy claims, it may be stated that unless it can be established as part of medicine with the environment such connection will offer, it will not be able to prove the right of legitimate existence. It does not appear how it can remain separate from medicine proper because, should it be ostracized, it will for its own protection, establish a school of its own and pharmacists will, to all intents and purposes, become medical men; and medical men, needing pharmacy offices, will become pharmacists. Thus the relationship will again be completed, but under most deplorable conditions.

This is admittedly a radical presentation, but how long, oh, how long, shall we temporize with this difficulty. It is, withal, a most respectful plea; for pharmacy can make claim to no other origin nor can it find peaceful rest in any other home. It is a plea made without the slightest desire to satisfy ambitious promptings, however laudable these may be, but it is solemnly made in the interest of peace, of progress and of humanity, for truth's sake; the truth that will, in spite of all opposing influence, "rise again," to the glorification of all concerned.

The Chair stated that without objection the report would be received to take the usual course, and it was so ordered.

Referring to the communication from Dr. Solis-Cohen, Mr. Fennel, of Cincinnati, made a few remarks, and agreed with Mr. Ebert as to the unsatisfactoriness of present conditions, but thought that pharmacists had stood in their own light in the matter. He was in favor of higher ideals, but believed likewise in practical work, and thought that if each member of the Association would do missionary work with even one physician that he might pick out, it would result in the hearty support and co-operation of the physicians, and go far towards making pharmacy what it ought to be in this country. He seconded the motion to extend a vote of thanks.

Mr. W. C. Anderson, of Brooklyn, thought the communication of Dr.

Cohen deserved some special notice, other than a mere vote of acceptance and thanks, and moved to amend that the Secretary be instructed to make a suitable acknowledgment, extending the thanks of the Association and stating that the American Pharmaceutical Association approved of the sentiments contained in that letter. Mr. Ebert said he would accept this, and the motion was seconded by Mr. Whelpley and several others, and carried unanimously.

Mr. C. S. N. Hallberg said he believed it would expedite business materially if there were constituted a Committee on Reference and Resolutions, to which could be referred all such matters as would properly come up at the last general session for final disposition, and moved the following:

Resolved, That a Committee on Reference and Resolutions be appointed, to consist of five members, one representative from each Section of the Association, to which all subjects presented to the Association in General Sessions and also to the various sections be referred to report on at the last General Session of the Association.

The resolution was seconded by Mr. Wilbert, of Philadelphia, and carried.

Mr. Lowe, Chairman of the Committee on Time and Place, gave notice of a meeting of his committee at 7:30 p. m., and invited all parties interested to be on hand and present their claims for next year's meeting.

Mr. Whelpley gave notice of the meeting of the Conference of Pharmaceutical Faculties on Wednesday afternoon at 3 o'clock, and invited all interested in pharmaceutical education to be present.

The General Secretary said he had been requested to call attention to the first session of the Section on Scientific Papers for Thursday morning at 10 o'clock, and invited all members to be present.

The report of the Nominating Committee was called for as next in order, and Mr. Whelpley, Secretary, read the report as follows:

INDIANAPOLIS, *September 3, 1906.*

To the Officers and Members of the American Pharmaceutical Association:

The Nominating Committee met with forty-one members present and unanimously nominated the following officers for the ensuing year:

President—Leo Eliel, South Bend, Ind.
First Vice-President—Wm. Mittelbach, Boonville, Mo.
Second Vice-President—C. S. N. Hallberg, Chicago, Ill.
Third Vice-President—Thos. P. Cook, New York City.
Treasurer—S. A. D. Sheppard, Boston, Mass.
General Secretary—Chas. Caspari, Jr., Baltimore, Md.
Reporter on Progress of Pharmacy—C. Lewis Diehl, Louisville, Ky.
Members of the Council for Three Years—J. P. Remington, Philadelphia, Pa.; Chas. E. Dohme, Baltimore, Md.; J. L. Lemberger, Lebanon, Pa.

Respectfully submitted,
J. P. REMINGTON, *Chairman.*
H. M. WHELPLEY, *Secretary.*

Mr. Wilbert moved that the Secretary be instructed to cast the affirmative ballot of the Association for Mr. Leo Eliel for President, and the motion was seconded by Mr. Hallberg and carried unanimously. The Secretary announced that he had cast the ballot as directed, and the Chair declared Mr. Leo Eliel, of South Bend, Ind., duly elected President of the American Pharmaceutical Association for the ensuing year.

Mr. Anderson then moved that the Secretary be instructed to cast the affirmative ballot of the Association for the remaining nominees of the committee, but the Secretary did not like the idea of voting for himself, and as the President was also a nominee for the Council, Mr. Anderson moved that Mr. Whelpley, Secretary of the Council, cast the ballot, and it was so ordered. Mr. Whelpley announced that the ballot had been cast, and the Chair declared all these gentlemen unanimously elected to the various offices set opposite their names.

The General Secretary announced the receipt of cabled greetings from London from Henry S. Wellcome and Frederick B. Power, life-members of the Association, showing that these gentlemen were with the Association in thought at least at this time.

The President here read certain parts of a communication received from Mr. N. H. Martin, of England, whose presence at the meeting at Atlantic City last year was well-remembered. Mr. Martin expressed his pleasure at hearing that the work of the Association was progressing, and that it had the prospect of a successful meeting at Indianapolis. He said he was much interested in the matter of the establishment of local branches of the Association, which he thought were sure to do good. He expressed his great satisfaction with the new edition of the National Formulary, a copy of which he had received; he thought it creditable to the Association, and most decidedly a work the American Pharmaceutical Association was well fitted to carry out. He sent kind remembrances, with the hope that the meeting might be creditable and successful.

Extracts from a letter from Dr. William Saunders, of Canada, were also read, expressing his regret that he could not be present, as his work would keep him in the West until the middle of September, and asking to be remembered to the members present.

Mr. O. A. Wall, of St. Louis, in this connection, speaking for the venerable Dr. Enno Sander, of that city, whose health would not permit of his attendance at this meeting, said he sent greetings to the Association and wished for all an enjoyable meeting.

Mr. Remington, of Philadelphia, read the following from a letter of date August 25th, he had received from Prof. W. M. Searby, of San Francisco, whom he described as an old and honored member of the Association, who had been coming to the meetings for many years as the only representative from the Pacific Coast:

"I am happy to say that I am living in moderate comfort near the college, which now occupies practically all my time. I am out of the retail drug business, and shall stay out. The college needs me, and I am now free to attend to my duties there without trying to do two men's work, as I have done for some years.

"I had planned to go to Indianapolis, but the fire rendered that impossible. The losses of the college were not so very heavy, but my own were, and those of our friends who had helped us in times past were almost paralysing, requiring all the way from four to seven figures to express them. To rehabilitate the college thoroughly (as we are doing), when we have no friends to call upon for financial aid, requires my best efforts and my presence here. In addition to this, we are fitting up a dispensing laboratory, and this will be under my charge. We open our session on September 21st, and one member of our faculty is a new man to us. So, you see, I feel that everything shows that my duty is here, and wherever I feel that my duty calls me, you will find me. I am greatly disappointed that I have to forego the pleasure of being with you, and the more so as so many, like yourself, have touched my heart with their kind letters and deeds, and I want to grasp them by the hand and once more look into their faces."

The Chair suggested that that portion of the letter from Dr. Searby read by Mr. Remington be referred to the new Committee on Reference and Resolutions, for some suitable expression to the writer, and Mr. Anderson so moved and the motion was adopted.

The Chair called for the reading of the minutes of the Council as the next order of business, and Mr. Whelpley, Secretary, read the minutes of the fourth session, held on the morning of September 4, 1906, beginning at 9:30:

FOURTH SESSION OF THE COUNCIL—SEPTEMBER 4, 1906.

Council called to order at 9:30 a. m. by Chairman Beal.

On roll-call, L. C. Hopp was the only member absent.

The committee of which E. G. Eberle was chairman reported as follows:

The Membership Committee, to whom was referred the status of membership of Mr. John Calvert, advise that the General Secretary correspond with Messrs. Wenzell and Searby to ascertain the advisability of furnishing Mr. Calvert with the Proceedings, and if they recommend such action, that the Association act accordingly.

With regard to the status of Messrs. Lewis P. Ohliger and Edw. J. Smith, they advise that the Secretary obtain official information relative to them, and that action be then taken.

The report was adopted.

On motion by Chas. Caspari, Jr., duly seconded, the name of Edward J. Smith was ordered dropped from the roll of members.

Moved by Edward Kremers and seconded by C. E. Caspari that the Program Committee be instructed to arrange the first sessions of the several Sections at times which do not conflict, and to leave the arrangement of subsequent simultaneous sessions to a committee of chairmen of the Sections.

Carried.

Treasurer Sheppard submitted the following report on expenses of the Bulletin:

REPORT OF CASH PAID OUT ON ACCOUNT OF THE BULLETIN FROM JANUARY 1 TO AUGUST 1, 1906.

January 27	$ 69 86
January 27	64 91
February 16	62 66
March 10	6 18
March 10	1 50
March 26	29 21
March 26	64 29
April 27	26 56
April 27	61 66
May 21	100 72
June 21	109 94
July 11	94 89
Total	$692 38

This does not include the salary of the editor, nor the cost of composition of the first four numbers of the Bulletin, which were printed almost entirely from the type already set up for the Proceedings.

Respectfully submitted,
S. A. D. SHEPPARD, *Treasurer.*

The following resolution was on motion of J. L. Lemberger, seconded by H. M. Whelpley, unanimously adopted.

Resolved, That no entertainment at any annual meeting shall be announced, or printed upon any program, or in any coupon book, until the same shall have been approved by the Council.

That the General Secretary is hereby instructed to inform the local Secretary each year of the above rule.

Moved by Chas. Caspari, Jr., and seconded by H. M. Whelpley that in accordance with a rule previously adopted by the Association (in 1897) the Entertainment announced for Thursday evening be cancelled because interfering with the meeting of the Section on Practical Pharmacy and Dispensing and that proper explanation be made at the second general session.

Adopted.

New members Nos. 229 to 276 inclusive were duly elected.

On motion the Council adjourned to 9 a. m., September 5.

Mr. Ebert expressed himself as opposed to the action of the Council in referring to Messrs. Searby and Wenzell the question of whether Mr. John Calvert should have the copies of Proceedings referred to, as he thought that was a matter the Council should decide for itself, and not put these gentlemen in the delicate position of deciding it. He also opposed on principle the singling out of one member in the city of San Francisco for this concession, though he would be glad personally to see the gentleman, who was a friend of his, thus favored.

The General Secretary explained that it was not on account of the San Francisco disaster that the suggestion was made, but that Messrs. Searby and Wenzell had written in Sepember last, long before that dire event, recommending that Mr. Calvert be reinstated as a full life-member, and that the Proceedings be furnished him, and the reference now was made for more recent information, as the Governor had since removed the whole Board of Pharmacy, including Mr. Calvert.

Mr. Sheppard stated that the members on the Pacific Coast, west of the Sierra Nevadas, were at a peculiar disadvantage, in that that they were rarely able to attend the meetings of the Association, or to come in contact with the members other than those of their immediate section, and he thought the Association should deal liberally with them and encourage them in every way possible, so as to beget their interest and enthusiasm. He said Mr. Calvert's case had been before the Council for a long time, and that there were many besides Mr. Searby and Mr. Wenzell who believed the proposed action in his case would be distinctly to the advantage of the Association, and he personally believed it would be a wise policy to pursue.

Mr. A. M. Roehrig added a word of explanation, to show that this matter was wholly dissociated from the San Francisco disaster, and came up on a communication dated in September, 1905, and read by the Secretary before the Council.

The President also explained his understanding of the matter, to the effect that Mr. Calvert was represented to have been a very valuable man in assisting members to procure new names for membership, and it came to the Council that the proposed action would put him in closer touch with the work, and that he had sufficient leisure to give to the effort to work up the membership. He thought this would be a small price to pay for the service.

Mr. Ebert still persisted, however, in thinking it would be unfair to make an exception in this case, and bestow ten volumes of the Proceedings upon Mr. Calvert, when there were other members perhaps just as valuable to the Association who would be justified in making similar demands.

Thereupon Mr. Ebert, duly seconded, moved that the matter of giving Mr. Calvert the copies of Proceedings in question be referred back to the Council for action.

Mr. Sheppard moved as a substitute that the minutes of the Council as read be adopted, and Mr. Eberle, of Texas, seconded the motion, saying that he thought it was the office of the Council to relieve the Associations of questions of this sort, and that to thus question its action would destroy its usefulness to a great extent.

Mr. Alpers, of New York, Chairman of the Committee on Practical Pharmacy and Dispensing, called attention to what he said was a slight error in the minutes of the Council in regard to the cancellation by the Council of the general entertainment feature set for Thursday evening on the program, which he said would not only detract from the attendance upon the session of the Section, but was in direct contravention of a resolution of the Council formerly passed, to the effect that no such entertainment should be held at the same time with a Section meeting. He added, however, that as the entertainment lasted from 9 o'clock until midnight, if the members would be prompt in attendance upon the Section meeting at 8 o'clock, an adjournment would be taken promptly at 10 (afterwards changed to 9 : 30), so as to give the members an opportunity to participate in the entertainment provided.

The substitute motion of Mr. Sheppard to approve the minutes of the Council as read was then put to an aye-and-no vote, and the result seemed to be close. Division was called for, and the vote stood 65 for the substitute to 11 against it, and the Chair declared Mr. Sheppard's motion adopted.

The Chair stated that Mr. Sayre, of Kansas, had a matter he was desirous of bringing up at this session, because he could not be present at the next general session, and he would be given the privilege of presenting it at this time.

Mr. Sayre said that he feared the action of the Council in regard to the National Formulary, as he understood it from the report of the Council Secretary, might be misunderstood, and he wanted the matter cleared up, in the interest of the authors of pharmaceutical works. His understanding was, that the Council had decided by resolution not to allow such authors the use of the text of that publication. He suggested, therefore, if that were the intent, that it be modified to read : That a limited privilege be given to authors, such as is common with all such publications.

The General Secretary explained that as he understood the action of the Council, afterward approved by the Association, it was, that permission would not be granted to any one to use the text of the work as a whole, and embody it in some other work, but that it was understood that if, at any time, permission was asked to use one or more specific formulas, for a certain purpose it would probably be granted, The effect of the action taken was to prevent the transfer of the National Formulary bodily into other works.

Mr. Sayre said he would like to have the language of the report modified to that effect then, that the words be interpolated, " except by application to the Council." This would make it entirely satisfactory to him.

Mr. Ebert objected to any modification, and wanted it left as it was. The Council might otherwise grant the privilege to one and not to another.

Mr. Sayre disavowed any personal axe to grind, and said he spoke solely in the interest of the authors of the country, and the reputation of this Association.

Mr. F. J. Wulling, of Minneapolis, said he did not want to have to go to anybody for permission to use a formula from the National Formulary when he desired to comment on it in the pharmaceutical press, to which he was an occasional contributor; but if that could not be, he was in favor of the addition to the clause : " except upon application to the Council."

The President, as a member of the Council, gave it as his belief that the Council had no thought of doing otherwise than giving permission to use the National Formulary as indicated, but that it did not want bodily confiscation of the book.

Mr. Mayo, of New York, raised a question as to the powers of the Council *ad interim*, in view of that fact that, as it seemed to him, the Council had definitely stated in the wording of the resolution, that neither the entire text of the National Formulary, nor any part thereof, could be thus used, and this action had been approved by the Association in general session. In this view he did not believe the Council would have any right legally to grant to authors the use of even a part of the text of the National Formulary until the action taken in general session should be revoked. He therefore moved a reconsideration of the vote taken in this behalf, in order that the powers of the Council in the interim between the annual meetings might be more clearly defined.

This motion, duly seconded, was put to a vote, and lost, on division, by a vote of 24 for to 39 against it.

An inquiry from Mr. Eliel brought out the fact that the publishers of pharmaceutical journals already had the right to use not exceeding five formulas from the National Formulary per month.

The General Secretary, in order to pour oil on the troubled waters, thought it might be well to make it general, that the authors of books should have the privilege of publishing, say, five or ten formulas from the National Formulary at any one time, in any issues of their books, for purposes of comment. At the suggestion of Mr. Anderson, he said this should include also publications put out by drug associations where certain formulas were distributed for a purpose.

Mr. Hallberg expressed the opinion that the object in view would be amply met by giving a modified form of the formula; that the physician, for instance, did not care for the formula, he wanted the descriptive dosage —the constituent elements of the dose—and he thought the Council would understand that any one who wanted to familiarize the physicians with the preparations of the National Formulary could do so much better by using the descriptive dosage than by using the formula itself. He thought this would meet the requirements pointed out by Mr. Anderson.

Mr. Thomas V. Wooten, of Chicago, in support of what Mr. Hallberg had said, stated that the N. A. R. D. was now distributing labels arranged just as he had indicated, labels for use on samples of National Formulary preparations, on which it was stated that each fluid drachm contained so much of the active constituent of the preparation. He did not think, however, that this quite met the requirements suggested by Mr. Anderson, where he wanted the privilege of distributing among the physicians such formulas from the National Formulary as his local association might deem desirable. As he understood it, though, this permission could be obtained from the Council. He asked to be informed upon this subject, as it was likely to come up quite frequently in the next few months, this question of what privilege an organization of druggists would have with reference to publishing the formulas used in the National Formulary.

Mr. Francis B. Hays, of New York, said it seemed to him that in considering a few specific matters the general aspect had been lost sight of, and he thought the Association should go back to the beginning and ask itself, as a body of professional pharmacists, what the National Formulary was published for in the first place. His idea was to aid the physician and pharmacist to get together on certain standard formulas, instead of going it hit-or-miss, and using preparations about which nobody knew anything. What is wanted is a gradual dissemination of these formulas among pharmacists and physicians, that the physicians may prescribe them and the pharmacists fill them. He did not favor giving to commercial publications the right to use the work of the Association without giving credit, but he thought the fullest possible use that could be consistently given the formulas of the National Formulary would be in the line of carrying out the ends for which the book was originally designed.

Mr. Hallberg raised the point of order that this subject should have been brought up for discussion in connection with the report of the Committee on National Formulary.

The Chair stated that the matter had been allowed to be introduced at this time as an accommodation to Mr. Sayre, who would not be at the next general session, but that the regular order of business would now be proceeded with.

The Chair called for the Treasurer's report as next in order, and Mr. Sheppard read his report, with the addendum, as follows:

REPORT OF THE TREASURER OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, JULY 1, 1905, TO JULY 1, 1906.

RECEIPTS.

Cash on hand July 1, 1905		$4,095 18
Received from sale of 8 certificates @ $7.50		60 00
" " 10 certificates @ $5.00		50 00
" " 1 duplicate certificate		3 75
" " Proceedings		84 76
" " Badges and Bars		64 30
" " National Formulary		734 24
Received on account of Ebert Fund		30 00
" Interest on Deposit in New England Trust Co., Boston		107 15
" Income from the William Procter Fund		467 38
" Reinstatement Fee		5 00
" Annual Dues, 1903	$110 00	
" " 1904	350 00	
" " 1905	3,690 00	
" " 1906	2,160 00	
" " 1907	5 00	
		6,315 00

Received on account of Semi-Centennial Index	353 08
" from Committee on Exhibition at Atlantic City, N. J., September 4–9, 1905	1,012 90
	$13,382 74

DISBURSEMENTS.

1905.					
August	14.	Check 1144.	John S. Bridges & Co., Printing and Stationery.		$41 85
	14.	Check 1145.	Henry Briele, Badges and Bars		55 50
	14.	Check 1146.	Wickersham Printing Co.—		
			National Formulary	$27 80	
			Proceedings	10 00	
			Insurance	6 88	
			Miscellaneous Expenses	2 16	
					46 84
	16.	Check 1147.	Nixon–Jones Printing Co., Printing and Stationery		14 15
	18.	Check 1148.	William Mittelbach, Committee on Membership.		13 40
September	9.	Check 1149.	William Mittelbach, Committee on Membership.		3 50
	9.	Check 1150.	Henry Briele, Badges and Bars		28 00
	9.	Check 1151.	Francis B. Hays, Miscellaneous Expenses		24 50
	9.	Check 1152.	Charles R. Sherman, Section on Commercial Interests		18 50
	9.	Check 1153.	Charles Caspari., Jr.—		
			Proceedings	$7 87	
			National Formulary	3 39	
			Semi-Centennial Index	7 56	
			Miscellaneous Expenses	32 44	
					51 26
October	7.	Check 1154.	E. J. Richardson & Sons, Insurance		29 00
	7.	Check 1155.	S. A. D. Sheppard, Traveling Expenses		21 75
	7.	Check 1156.	The Menges Pharmacies, Section on Historical Pharmacy		13 15
	7.	Check 1157.	Charles A. Rapelye, Section on Practical Pharmacy and Dispensing		3 70
	7.	Check 1158.	Harry B. Mason, Section on Education and Legislation		11 37
	7.	Check 1159.	Wickersham Printing Co.—		
			Section on Scientific Papers	$9 14	
			Section on Education and Legislation	8 00	
			Section on Commercial Interests	8 00	
			Section on Practical Pharmacy and Dispensing	8 00	
			Section on Historical Pharmacy	8 00	
					41 14
	28.	Check 1160.	John S. Bridges and Co., Printing and Stationery		7 55
	28.	Check 1161.	C. Lewis Diehl, Honorarium for special work on the revision of the National Formulary		500 00
	28.	Check 1162.	C. H. Buck & Co., Printing and Stationery		47 00
	28.	Check 1163.	Charles Caspari, Jr., Traveling Expenses		10 50

November	8.	Check 1164. S. A. D. Sheppard, Treas. A. Ph. A. To purchase exchange on Germany, for account of Prof. Ernst Schmidt of Marburg, Germany, winner of the Ebert Prize.		30 00
	8.	Check 1165. J. G. McLean, Stenographer..............		200 00
	8.	Check 1166. John S. Bridges & Co., Printing and Stationery		23 25
	10.	Check 1167. The Druggist's Circular. To pay loan for publication of the Semi-Centennial Index..............		325 00
	10.	Check 1168. Merck's Report. To pay loan for publication of the Semi-Centennial Index........................		325 00
	10.	Check 1169. The Bulletin of Pharmacy. To pay loan for publication of the Semi-Centennial Index..............		325 00
	10.	Check 1170. The American Druggist, to pay loan for the publication of the Semi-Centennial Index..............		325 00
	16.	Check 1171. Alpha Photo-Engraving Co., Proceedings ...		27 77
	16.	Check 1172. James H. Beal, Miscellaneous Expenses.....		3 50
	16.	Check 1173. Caswell A. Mayo, Section on Historical Pharmacy		16 50
	16.	Check 1174. C. H. Buck & Co., Printing and Stationery..		5 00
December	7.	Check 1175. C. H. Buck & Co., Printing and Stationery..		27 00
	7.	Check 1176. H. M. Whelpley—		
		First half-year's salary as Secretary of Council, 1905–1906. Less 10 per cent..............	$135 00	
		Expense of Office	37 50	
		Miscellaneous Expenses....................	5 20	
				177 70
	7.	Check 1177. C. Lewis Diehl, 1st half-year's salary as Reporter on Progress of Pharmacy, 1905–1906. Less 10 per cent......................................		337 50
	7.	Check 1178. S. A. D. Sheppard, 1st half-year's salary as Treasurer, 1905–1906. Less 10 per cent................		337 50
	7.	Check 1179. Charles Caspari, Jr., 1st half-year's salary as General Secretary, 1905–1906. Less 10 per cent.......		450 00
1906.				
January	27.	Check 1180. C. S. N. Hallberg, A. Ph. A. Bulletin.......		69 86
	27.	Check 1181. John S. Bridges & Co.—		
		Printing and Stationery......................	$30 05	
		Committee on Membership	9 45	
		Section on Practical Pharmacy and Dispensing ..	4 16	
		Section on Commercial Interests...............	5 24	
		Section on Scientific Papers..................	4 16	
		Section on Education and Legislation	5 60	
		Section on Historical Pharmacy	4 88	
				63 54
	27.	Check 1182. William Mittelbach, Committee on Membership		23 00
	27.	Check 1183. Nixon-Jones Printing Co., Printing and Stationery..		19 15
	27.	Check 1184. Wickersham Printing Co.—		
		Printing and Stationery......................	$16 00	
		Proceedings	3 45	
		A. Ph. A. Bulletin........................	64 91	
		National Formulary.........................	1 65	
				86 01

February	16.	Check 1185. S. A. D. Sheppard & Co.—		
		Printing and Stationery	$9 50	
		Miscellaneous Expenses	26 31	35 81
	16.	Check 1186. Wickersham Printing Co.—		
		Proceedings	$22 09	
		National Formulary	1 85	
		A. Ph. A. Bulletin	62 66	86 60
March	10.	Check 1187. C. S. N. Hallberg. A. Ph. A. Bulletin		6 18
	10.	Check 1188. The Menges Pharmacies. Section on Historical Pharmacy		16 50
	10.	Check 1189. John S. Bridges & Co.—		
		Printing and Stationery	$21 60	
		Section on Historical Pharmacy	9 18	30 78
	10.	Check 1190. Charles Caspari, Jr.—		
		Proceedings	$12 74	
		Semi-Centennial Index	2 91	
		Journals	31 70	
		Badges and Bars	3 04	
		A. Ph. A. Bulletin	1 50	
		National Formulary	9 31	
		Miscellaneous Expenses	26 47	87 67
	10.	Check 1191. Thomas J. De Lashmutt, Mgr. of Washington, D. C., Branch of American Bonding Co., of Baltimore, Premium on Treasurer's Bond		12 50
	26.	Check 1192. C. S. N. Hallberg, A. Ph. A. Bulletin		29 21
	26.	Check 1193. Nixon-Jones Printing Co., Printing and Stationery		17 80
	26.	Check 1194. Wickersham Printing Co.—		
		Proceedings	$11 50	
		A. Ph. A. Bulletin	64 29	75 79
April	27.	Check 1195. Alpha Photo-Engraving Co., Proceedings		3 49
	27.	Check 1196. C. S. N. Hallberg, A. Ph. A. Bulletin		26 56
	27.	Check 1197. Nixon-Jones Printing Co., Printing and Stationery		3 00
	27.	Check 1198. Wickersham Printing Co., A. Ph. A. Bulletin.		61 66
May	7.	Check 1199. William Mittelbach, Committee on Membership		39 25
	7.	Check 1200. John S. Bridges & Co., Printing and Stationery		7 05
	7.	Check 1201. Security Storage and Trust Co., Miscellaneous Expenses		10 00
	21.	Check 1202. C. S. N. Hallberg, A. Ph. A. Bulletin		100 72
June	2.	Check 1203. James H. Beal Miscellaneous Expenses		6 57
	2.	Check 1204. Nixon-Jones Printing Co., Printing and Stationery		4 85
	21.	Check 1205. C. H. Buck & Co., Printing and Stationery		47 00
	21.	Check 1206. I. H. Libby, Engrossing certificates		4 50
	21.	Check 1207. Securities Storage and Trust Co., Miscellaneous Expenses		10 00

June	21.	Check 1208. Wickersham Printing Co., Proceedings		2,342 34
	21.	H. M. Whelpley, 2nd half-year's salary as Secretary of Council 1905–1906.		
		Less 10 per cent	$135 00	
		Expenses of office	37 50	
		Miscellaneous Expenses	5 15	
				177 65
	21.	Check 1211. S. A. D. Sheppard, second half-year's salary as Treasurer, 1905–1906. Less 10 per cent		337 50
	21.	Check 1212. C. Lewis Diehl, second half-year's salary as Reporter on Progress of Pharmacy, 1905–1906. Less 10 per cent		337 50
	21.	Check 1213. Charles Caspari, Jr. Circular letter on account of National Formulary		482 87
	21.	Check 1214. Charles Caspari, Jr., second half-year's salary as General Secretary, 1905–1906. Less 10 per cent		450 00
	21.	Check 1215. John S. Bridges & Co.—		
		National Formulary	$206 21	
		Miscellaneous Expenses	18 40	
				224 61
	21.	Check 1216. C. S. N. Hallberg, A. Ph. A. Bulletin		109 94
	25.	Check 1217. Nixon-Jones Printing Co. Printing and Stationery		6 95

SUMMARY OF DISBURSEMENTS.

Proceedings	$2,441 25
Stenographer.	200 00
Journals for the Reporter on Progress of Pharmacy	31 70
Salaries	2,520 00
Premium on Treasurer's Bond	12 50
Traveling Expenses.	32 25
Section on Practical Pharmacy and Dispensing	15 86
Section on Education and Legislation.	24 97
Section on Commercial Interests	31 74
Section on Scientific Papers	13 30
Section on Historical Pharmacy	68 21
Committee on Membership	88 60
Printing and Stationery	348 75
Insurance.	35 88
Badges and Bars.	86 54
Certificates.	4 50
Ebert Prize	30 00
Miscellaneous Expenses	170 70
National Formulary	733 08
Honorarium for Prof. C. Lewis Diehl for special work on the Revision of the National Formulary	500 00
Semi-Centennial Index.	1,310 47
Office Expenses of Secretary of Council	75 00
A. Ph. A. Bulletin.	597 49
Total amount of Disbursements	$9,372 79
Cash on hand July 1, 1906.	4,009 95
Total.	$13,382 74

APPROPRIATIONS AND EXPENDITURES, UNDER THE SAME, FOR THE FISCAL YEAR, JULY 1, 1905, TO JULY 1, 1906, TRANSFERS, AS AUTHORIZED BY GENERAL RULE OF FINANCE, NO. 13, INCLUDED.

	Appropriations and Transfers.	Expenditures.
Salaries	$2,520 00	$2,520 00
Proceedings	2,441 25	2,441 25
Printing and Stationery	348 75	348 75
Miscellaneous Expenses	300 00	170 70
Stenographer	200 00	200 00
Badges and Bars	86 54	86 54
Journals for Reporter on Progress of Pharmacy	31 70	31 70
Committee on Membership	425 00	88 60
Section on Scientific Papers	40 00	13 30
Section on Education and Legislation	30 00	24 97
Section on Commercial Interests	31 74	31 74
Section on Practical Pharmacy and Dispensing	30 00	15 86
Section on Historical Pharmacy	68 21	68 21
Premium on Treasurer's Bond	12 50	12 50
Insurance	25 00	6 88
Travelling Expenses	150 00	32 25
Certificates	15 00	4 50
Honorarium for Prof. C. Lewis Diehl for special work on Revision of National Formulary	500 00	500 00
Advertising National Formulary.	689 08	689 08
A. Ph. A. Bulletin	615 00	597 49
Office Expenses of Secretary of Council	75 00	75 00
Special order, for payment of Pharmaceutical Journals	1,300 00	1,300 00
Special order, for insurance on property stored in Baltimore	29 00	29 00
	$9,963 77	$9,288 32

PROSPECTIVE ASSETS.

Not counting what is due from members whose names will probably be dropped from the roll, and also from members whose residence is unknown, there was outstanding on the books of the Association, July 1, 1906:

Annual Dues for 1905	$965 00
Annual Dues for 1906	5,110 00
	$6,075 00

Respectfully submitted, S. A. D. SHEPPARD, *Treasurer.*

BALTIMORE, MD., *August* 3, 1906.

We have examined the books of the Treasurer of the American Pharmaceutical Association and have found them correct in every particular.

J. J. HANCOCK, *Chairman*,
DANIEL BASE,
C. J. CORNING.

ADDENDUM TO TREASURER'S REPORT.

July 1, 1906.

The net cash balance, July 1, 1906, is $1,844.95. The receipts for the year, including the income from the Procter Fund, $467.38, were $9,287.56.

The expenses for the year were $9,372.79; thus the expenses exceeded the receipts by $85.23.

In considering this fact it should be remembered that the following items of expense (beyond our previous ordinary demands) have been incurred:

Honorarium paid on account of the work of the revision of the National Formulary	$500 00
Other Formulary expenses, in excess of the advance receipts for the sale of the Revised Edition	109 35
A. Ph. A. Bulletin	597 49
	$1,206 84

The payment of $1,300.00, the loan so kindly made to us by four Pharmaceutical Journals, was more than offset by the money received from the Exhibition at Atlantic City, $1,012.90, and the receipts from the sale of the Semi-Centennial Index, $353.08.

The salary of the Editor of the Bulletin, $200.00, for the year commencing with last year's meeting, has not yet been paid.

The Ebert Fund has increased during the year	$6 60
The Centennial Fund has increased during the year	71 94
	$78 54

The Procter Fund has *not* increased during the year because all the income has been used for current expenses; and no Life Membership Fees have been received.

It is to be hoped that the use of the income from the Procter Fund will not be needed much longer for current expenses, for it is a fact beyond question that the Association should have a large fund available from which to draw in emergency.

Total value of all the funds, July 1, 1906, $17,745.72.

Attention is here called to two changes in our By-Laws, made in recent years: One as to Life Membership; the other as to delinquent members. Experience seems to show, in each case, that the change was not wise and that it will now be expedient to return to our former long tried customs, though possibly the old Life-membership By-Law might be slightly modified.

The Treasurer is the one man in the Association who is brought in contact with the great body of our members, by correspondence if not personally, and it is this experience with the membership of the Association that leads to the above conclusion.

The old By-Law as to Life Membership was:

"Any member, not in arrears to the Association, who shall pay to the Treasurer the sum of $75 during the first year of his connection therewith, or after five years $70, or after ten years $60, or after fifteen years $50, or after twenty years $40, or after twenty-five years $30 or after thirty years $20, or after thirty-five years $10, also any member who shall have paid to the Treasurer annual dues for thirty-seven years, shall become a Life Member, and shall be exempt from all future annual contributions."

The present By-Law is:

"Any member, not in arrears to the Association, who shall pay to the Treasurer the sum of $100 during the first year of his connection therewith, or after ten years $75, or after fifteen years $50, shall become a Life Member, and shall be exempt from all future contributions."

Since the present By-Law has been in force, two years, we have had not one addition to our list of Life Members and, judging from sentiments expressed by various members, it is safe to say that we will have no more Life Members, if the present By-Law is kept in force.

There are quite a number of members now awaiting the decision of this question. They have, severally, paid for twenty to thirty years.

If we return to the old plan they will doubtless all become life members; if we do not they are likely to resign.

As men advance in years and become less active they naturally lose the enthusiasm of early life; do we want to lose such men? Or, to put the question differently, can or cannot the Association afford to carry such men on its rolls, as life members, by the payment on their part of the money formerly asked of them? Personally I think that class of men is one of our best, and that the amount of money they pay into our treasury during their membership, under the old plan, is enough to rightfully entitle them to life membership.

The one and only strong argument on the other side is that, in the long run, the cost of the Proceedings sent to a large number of life members is something enormous. Perhaps some plan can be adopted by which this cost can be reduced. Some of the members as they advance in years care less about receiving the book. Others enjoy studying over the Proceedings in the quiet of their homes, and if such wish for the book, suppose we let them have it at a nominal price, say $1.00 per volume, and that the Proceedings be sent only to those life members who are willing to pay this nominal price.

An interesting question would arise should this change be made. It is this: Shall such payment of a nominal price for the Proceedings apply to our present life members (128 in number) or only to those who shall become life members after such a rule has been adopted?

My judgment is that it should *not* apply to our present life members.

Now as to delinquent members. There has always been a good deal of discussion of this important phase of our Association life and, in recent years, this discussion has at times been very earnest. Formerly the rule was, to drop a member who was three years in arrears; now it is two years.

There is, among us, a good deal of misunderstanding, or else lack of close and careful thought on this subject. The American Pharmaceutical Association is, primarily, a scientific body. It does not appeal to the so-called "pocket nerve" or the ordinary retail druggist and it is very hard for many of them to see $5.00 a year in it.

Our membership is largely recruited by active personal solicitation. Now many a man says "Yes" to a friend who urges him to join, especially if our annual meeting is to be held in his neighborhood, and in the enthusiasm of the hour gives his friend $5.00 for the first year's dues: yet this same man may really care almost nothing at all about our work.

Such men usually neglect to pay the second or third year's dues and allow their names to be dropped from the roll. This statement can be verified by an examination of our printed lists of dropped members during the twenty years in which I have been Treasurer. These lists show that this class of men form a very large percentage of the members dropped; in some years 60 to 70 per cent.

It was thought that these men, in particular, might be stimulated as to prompt payment of dues by the liability of being dropped after a two year's delinquency; my experience with them does not show this. The Treasurer should have the longer time to labor with them, in the hope that a few of them, at any rate, may be induced to remain with us.

The Bulletin also, sent as it is to every member, will now be quite a help in getting such men interested in our work so that they will desire to hold their membership in the Association.

I most earnestly recommend that we go back to the three (3) year limit of our former By-Law.

It is a pleasure to be able to close this addendum to the report of the Treasurer by the following statement: Never before in my experience have the members, in all parts of the country, paid their dues so promptly as they have during the past six months. It certainly indicates an unusual prosperity among our members; and also leads us to think that the good work of the Bulletin is being shown by results.

This augurs well for our future.

Respectfully submitted,

S. A. D. SHEPPARD, *Treasurer.*

The Chair called for action on the report, and reminded the members that there were some recommendations in it. Thereupon, Mr. Claus moved to receive the report and refer the recommendations to the new Committee on Reference and Resolutions, and this motion was seconded by Mr. Eberle and carried.

Treasurer Sheppard presented two proposed amendments to the By-Laws, one as to life-membership and the other as to delinquents, which the Chair stated the rule required to lie over until the next session.

The General Secretary made his report as follows:

REPORT OF THE FINANCIAL ACCOUNTS IN THE CARE OF THE GENERAL SECRETARY.

A. RECEIPTS AND EXPENDITURES ON ACCOUNT OF NATIONAL FORMULARY, FROM JULY 1, 1905, TO JUNE 30, 1906.

I. Receipts.

From Sales and Payment of Bills due July 1, 1905		$734 24

II. Expenditures.

Printing, Folding and Mailing 43,580 Circulars	$689 08	
Honorarium paid C. Lewis Diehl	500 00	
Typewriting and Mimeographing Specifications	7 25	
Paper and Press-Work, 150 copies National Formulary	17 50	
Binding 65 copies National Formulary in cloth, @ 11 cts	7 50	
Expressage and Postage	11 10	
		1,232 43

III. Remittances.

To Treasurer, as per Treasurer's Receipts		734 24

IV. Sales.

To dealers and individuals, as per ledger accounts:		
National Formulary	$733 04	
Physicians' Epitome	1 20	
		734 24

V. Accounts Unpaid.

By dealers		0

VI. Bills Due by the Association.

Bills for Composition, Paper, Press-Work and Binding of the new edition now going through the press, have not yet been presented.

VII. Stock on Hand.

Copies in flat sheets (unbound)	0
Copies bound in cloth	0
Copies bound in cloth, interleaved	0
Copies bound in sheep	0
Copies bound in sheep, interleaved	0

B. SUMMARY OF TOTAL RECEIPTS AND EXPENSES ON ACCOUNT OF NATIONAL FORMULARY SINCE 1888.

Receipts to June 30, 1905 (see Proc., Vol. 53, p. 37)	$13,357 32	
Receipts from July 1, 1905, to June 30, 1906	734 24	
		$14,091 56

Expenses to June 30, 1905 (see Proc., Vol. 53, p. 37)	7,809 80	
Expenses from July 1, 1905, to June 30, 1906	1,232 43	
		9,042 23
Total Receipts from Sale of Physicians' Epitome from June 1, 1900, to June 30, 1906		559 62
Total Expenses on Account of Physicians' Epitome from June 1, 1900, to June 30, 1906		649 45

C. SALE OF PROCEEDINGS.

Receipts from July 1, 1905, to June 30, 1906	84 76
Remitted to Treasurer, as per Treasurer's Receipts	84 76

D. TOTAL RECEIPTS AND EXPENSES ON ACCOUNT OF GENERAL INDEX OF PROCEEDINGS.

Receipts from July 1, 1903, to June 30, 1904	$341 67	
Receipts from July 1, 1904, to June 30, 1905	1,558 72	
Receipts from July 1, 1905, to June 30, 1906	353 08	
		$2,253 47
Expenses from July 1, 1903, to June 30, 1904	$236 85	
Expenses from July 1, 1904, to June 30, 1905	1,573 20	
Expenses from July 1, 1905, to June 30, 1906	1,310 47	
		3,120 52

E. ACCOUNT OF BADGES AND BARS.

On hand July 1, 1905 (see Proc., Vol. 53, p. 38)	Badges 0,	Bars 67		
Received July 19, 1905, from Henry Briele	“ 30			
Received September 4, 1905, from Henry Briele		“ 40		
Received February 5, 1906, from Henry Briele		“ 5		
	30	112		
Badges sold from July 1, 1905, to June 30, 1906, 16 @ $2.00			$32 00	
Bars sold from July 1, 1905, to June 30, 1906, 40 @ 75 cts			30 00	
3 @ 60 cts			1 80	
1 @ 50 cts			50	
				64 30
Remitted to Treasurer, as per Treasurer's receipts				64 30
Balance on hand July 1, 1906	Badges 14.	Bars 68		
Total Receipts from Sale of Badges and Bars to June 30, 1905 (see Proc., Vol. 53, p. 38)			$1,191 50	
Receipts from July 1, 1905, to June 30, 1906			64 30	
				1,255 80
Total Cost of Badges and Bars to June 30, 1905 (see Proc., Vol. 53, p. 38)			$1,093 35	
Cost of 30 Badges received July 19, 1905			55 50	
Cost of 40 Bars received September 4, 1905			28 00	
Cost of 5 Bars received February 6, 1906			3 04	
				1,179 89

CHAS. CASPARI, JR., *General Secretary.*

Baltimore, July 2, 1906.

On motion of Mr. Thos. F. Main, of New York, the report was ordered received and referred to the Committee on Publication.

The Chair stated that there was still some available time before the Association at this session, that there were some very important committee reports to be made, and that there would be no other general session before Saturday.

Mr. Sheppard being recognized, brought up the National Formulary matter again. He said there were new and important questions in regard to the National Formulary likely to come up during the next twelve months; referred to the proposition of the American Medical Association to publish an epitome of the U. S. Pharmacopœia and National Formulary, to be bound together in one book for circulation among the physicians of the United States; reminded the members of what Mr. Wooten had said about the N. A. R. D., and said that to avoid the confusion that would result if, as suggested by Mr. Mayo, the Association should, at its next meeting, disprove of any action by the Council in the meantime in connection with the National Formulary, he desired to offer the following resolution:

Resolved, That the Council be given full power to act on all questions relating to the National Formulary that may arise previous to the next annual meeting of this Association.

Mr. Mayo seconded this motion, and in doing so stated, as before, that as the Association had approved the action of the Council, it would seem that unless some such action as this was taken the Council in the meantime could not legally take any action which would contravene the action of the Association in general session, where the action was specific, as in this instance.

Mr. Sayre expressed the hope that further discussion of this matter would be postponed until after the reading of the report of the Committee on National Formulary.

Mr. Anderson moved that the resolution just offered be referred to the Committee on Resolutions.

Secretary Caspari thought that this highly important matter could be disposed of very quickly and satisfactorily by giving the Council full power to act in relation to all questions pertaining to the National Formulary that might arise previous to the next annual meeting of the Association.

The Chair thereupon put the vote on Mr. Sheppard's resolution, and it carried.

The Chair called on Mr. John F. Hancock, of Baltimore, Chairman of the Committee on Procter Monument Fund, to make report of the work of that committee, and Mr. Hancock made a verbal report of some length, in which he outlined Professor Procter's distinguished services to pharmacy in this country, which had justly earned him the title of "Father of American Pharmacy," and told of the object in view, to erect a monument in the Smithsonian grounds at Washington which should stand, not only as a monument to Procter, but to the American Pharmaceutical Association as well—an association he had done so much to establish. He described the encouraging progress of the work through the State associations, but said that the main object now was to get the individual pharmacists interested in the success of the enterprise. He then called on Mr. Hallberg, Secretary of the Committee, to read the financial report of the Committee as far as they had gone.

Mr. Hallberg therupon made the following report:

REPORT ON PROCTER MEMORIAL FUND.

CHICAGO, SEPTEMBER 1, 1906.

The Chairman's address in the May "Bulletin" was reprinted and 5,000 booklets were distributed to the State Pharmaceutical Association meetings through the member of the Committee on Membership and Reception, with subscription blanks, with a few exceptions, where for some reason the "Bulletin" failed to connect, the attendants at all the State Association meetings were covered in this way. Seven State Associations responded directly to the appeal, and many more have been heard from. Committees have probably been appointed in all the States, and they should be able to make good account at the next meeting.

EXPENSES.

May.	5,000 Procter Memorial booklets printing	$27 00
	1,000 subscription lists	4 50
June.	Expressage	4 90
	Postage	4 75
		$41 15

Statement Sent July 1.

July.	Postage	$0 75
	Postage	1 25
August.	Postage	1 25
	Expressage	75
	Expressage	25
	Bank exchange	50
		$45 90

SUBSCRIPTIONS RECEIVED.

Wilbur F. Jackman, Orono, Me.	$1 00	
Oscar Oldberg. 87 Lake st., Chicago	10 00	
F. W. Meissner, La Porte, Ind.	1 00	
F. B. Lillie, Guthrie, Okla	1 00	
C. S. N. Hallberg, Chicago	10 00	
Illinois Pharmaceutical Association, W. B. Day	7 00	
Alabama Pharmaceutical Association, P. C. Candidus	30 00	
Missouri Pharmaceutical Association, O. F. Claus	10 00	
Indiana Pharmaceutical Association, W. F. Meissner	20 00	
Remitted to Chairman Hancock, check payable to B. T. Fairchild		$90 00
Texas Pharmaceutical Association, E. G. Eberle	22 50	
Vermont Pharmaceutical Association, Collins Blakely and W. H. Zottmann	25 00	
Iowa Pharmaceutical Association, J. M. Lindley	50 00	
Remitted to Chairman Hancock		$97 50
		$187 50

Respectfully submitted, C. S. N. HALLBERG.

Mr. Hallberg explained that reports from all the State Associations had not been received, and he had been advised there were some that had made collections, though he had reported only money actually collected and passing through his hands.

Mr. Remington thereupon made verbal report for the Pennsylvania State Association, saying that the contributions so far amounted to about $150, with collections still coming in. He asked to have Pennsylvania included in the report.

Mr. Sayre said that the Kansas Association had also made a contribution, which he thought had been sent to Mr. Edward Kremers. He gave no statement of amount.

Mr. Wulling stated that the Minnesota Association had, at its last meeting, voted $100 to this fund.

Mr. Hallberg said the fact had been reported in the Bulletin, but that he had not as yet received the money.

Mr. Hancock then went on to state that the work had been somewhat retarded by his break-down during the summer, which made it necessary for him to stop all work for the time being and take a rest. He gave some details of the work, as to character and extent of correspondence, etc., and said the committee had received some subscriptions of $100, some of $75 and others of $50. With the large number of pharmacists in the country he thought the committe would be able to raise a fund large enough for the purpose.

Mr. Main moved that the report be received and referred for publication, and that the secretary of the committee be given leave to add to the report such other sums as he might receive up to the time of publication of the Proceedings. The motion was seconded by Mr. Mayo and carried.

Mr. Charles Holzhauer, of New Jersey, voiced his objection to having two funds named for Procter, thus leading to confusion and misunderstanding. He said the Association already had a William Procter Fund (a life-membership fund), and a great many members thought it had something to do with this monument fund.

Mr. Hancock handed around among the members for their inspection an enlarged photograph of Procter, the original of which was taken just before his death.

The Chair called for the report of the Committee on National Legislation, and Mr. Ebert of that committee presented the report, but moved, as the time was so short for consideration, that it be received and referred to the Section on Education and Legislation, and it was so ordered.

Mr. Mayo moved to adjourn, but the Chair suggested that the Association take a recess only, to some convenient time, on account of the great amount of business to be dispatched, an amount never before equaled in the history of the Association, as far as he knew. Mr. Mayo thereupon changed his motion to take a recess, subject to call of the Council.

The motion prevailed, and the Association took a recess accordingly.

THIRD SESSION—TUESDAY AFTERNOON, SEPTEMBER 4, 1906.

No business was transacted by the Association previous to the first session of the Section on Pharmaceutical Education and Legislation.

FOURTH SESSION—TUESDAY EVENING, SEPTEMBER 4, 1906.

No business was transacted previous to the first session of the Section on Commercial Interests.

FIFTH SESSION—WEDNESDAY MORNING, SEPTEMBER 5, 1906.

No business was transacted previous to the second session of the Section on Pharmaceutical Education and Legislation.

SIXTH SESSION—THURSDAY MORNING, SEPTEMBER 6, 1906.

No business was transacted previous to the first session of the Section on Scientific Papers.

SEVENTH SESSION—THURSDAY EVENING, SEPTEMBER 6, 1906.

No business was transacted previous to the first session of the Section on Practical Pharmacy and Dispensing.

EIGHTH SESSION—FRIDAY MORNING, SEPTEMBER 7, 1906.

No business was transacted previous to the first session of the Section on Historical Pharmacy and the second session of the Section on Practical Pharmacy and Dispensing, meeting simultaneously.

NINTH SESSION—FRIDAY AFTERNOON, SEPTEMBER 7, 1906.

No business was transacted previous to the second session of the Section on Scientific Papers and the second session of the Section on Commercial Interests, meeting simultaneously.

TENTH SESSION—FRIDAY EVENING, SEPTEMBER 7, 1906.

No business was transacted previous to the second session of the Section on Historical Pharmacy.

ELEVENTH (RECESS) SESSION—SATURDAY MORNING, SEPTEMBER 8, 1906.

President Lemberger called the session to order at 9:30 o'clock, explaining that this was a continuation of the second general session, which took a recess on Tuesday, subject to call of the Council.

The Chair called for reports of committees due to be read at the second general session.

The General Secretary presented the following report of the Committee on Proposed Pharmaceutical Collection at Washington:

MADISON, WIS., *August* 27, 1906.

To the Members of the American Pharmaceutical Association:

Owing to the fact that the old National Museum is over-crowded, and a new building is now in course of construction, this committee has no further report to make than the following suggestions:

1. That the committee be continued, and
2. That should the building progress sufficiently during the coming year, the Assistant Secretary of the Smithsonian Institution be conferred with regarding the details of space that it may seem desirable to reserve for the pharmaceutical collections to be deposited at Washington.

For the Committee, EDWARD KREMERS, *Chairman.*

Mr. Wilbert moved to receive the report, to take the usual course, and the motion was seconded by Mr. Alpers and carried.

The Secretary also read the report of the Committee on National Formulary:

REPORT OF THE COMMITTEE ON NATIONAL FORMULARY.

To the American Pharmaceutical Association:

The manuscript for the revised "Formulary" having been submitted practically complete at last year's meeting of the Association, no work has been done by the Committee that requires report at this time. With the appearance in print of this revised work, however, the responsibilities of the Association have assumed a new and more serious phase, inasmuch as, simultaneously almost with its issue, the National Formulary has by congressional enactment become a legal standard for the guidance of examinations under the Pure Food and Drug Law. It has, therefore, become incumbent upon this Association, through its Committee, to be on the alert to discover imperfections that may still exist in the "Formulary," and to make provision for their correction if such there be. Recognizing this to be the most important duty of the Committee, it is earnestly hoped and expected that criticisms and suggestions will be freely made and promptly submitted to the Chairman, or to the individual members of the Committee, by pharmacists generally and by the members of the Association in particular.

Respectfully submitted on behalf of the Committee,

C. LEWIS DIEHL, *Chairman.*

Mr. Wilbert moved that the report be received, and that it be given as wide publicity as possible, and that, to this end, copies of the report be sent to the various drug journals. This motion was seconded by Mr. F. M. Apple, of Philadelphia, and carried.

Mr. Remington stated that as the American Pharmaceutical Association had started on an entirely new course with regard to the National Formulary, it might not be thoroughly understood, and he would like to offer the following resolution:

> WHEREAS, The American Pharmaceutical Association having resolved at its annual meeting in Indianapolis in 1906, to withhold permission to use the text of the third edition of the National Formulary by books not issued by this Association. Be it
>
> *Resolved*, That all applications to use parts of the text by associations, firms, corporations or individuals which may be received be referred to the Council for action and that if permission be granted by the Council to one association, firm, corporation or individual, that the same privilege may be extended to any other of approved standing upon the same terms.

Mr. Sheppard rather demurred to the resolution, as being perhaps too far-reaching. He would probably be willing, he said, as a member of the Council, to vote that the American Medical Association should have the right to print an epitome of the National Formulary, but might not be willing that some other association of equal standing should do so, as the circumstances might be entirely different. Besides, the Association had already granted to the Council full power to act in the premises during the next twelve months, and he would not like to see the hands of the Council tied in any way now.

Mr. Remington gave it as his opinion that this matter should be cleared up, so the country would understand it.

At request of Mr. Wilbert, the Secretary read the resolution again, for a more complete understanding of its terms.

The Chair then called for an aye-and-no vote on the resolution, and the result was close. Division was called for, and showed that the resolution was adopted by a vote of 10 to 8 against it, and the Chair declared it carried.

The Secretary produced the report of the Committee on National Legislation, but stated that, to save time, he would only read the recommendations of the committee, if there was no objection. The text of the report here follows:

REPORT OF COMMITTEE ON NATIONAL AND STATE LEGISLATION.

To the Officers and Members of the American Pharmaceutical Association:

Your Committee on National and State Legislation respectfully submits the following report:

The year which has elapsed since our last meeting has been a busy one with both agitators and legislators. The crusade for foolish and ill-advised drug legislation has been widespread; but foolish propositions have generally been ignored in State Legislatures as well as in Congress, and some good legislation has been enacted.

Most important is the National Pure Food and Drug law—the outcome of many years of agitation and discussion. While this law in some directions goes far beyond the intent of its original promoters, it is on the whole a reasonable and conservative measure; and, if wisely and impartially administered, should benefit not only the general public, but the drug trade also. Every pharmacist should welcome a law designed to secure to the trade drugs of standard strength and purity. It is true that nothing in the law prohibits traffic in the goods of inferior quality; but the law does require such drugs to be labeled for what they are; and when this law is fairly in operation no pharmacist who has eyes to see, and a determination to know, need have any fear of having inferior goods imposed upon him.

Whatever defects there may be in other portions of the law, the drug trade is to be congratulated upon the full recognition of the United States Pharmacopœia and National Formulary as the primary standard of strength, quality and purity, and that any article sold under a name recognized in those works which falls short of the standards prescribed therein must be so labeled that the purchaser may know exactly what he is buying. The provision requiring every drug which contains any alcohol, morphine, opium, etc., to bear a label stating the quantity or proportion of such ingredients was the subject of considerable controversy in the House of Representatives; but the final result seems to be generally accepted as reasonable by all branches of the drug trade; and it is to be earnestly hoped that, if any legislation on this subject is deemed necessary in the various States, the Legislatures will follow as closely as possible both the form and substance of the drug provisions of the National Law. Every argument is in favor of uniform laws upon this subject, and, now that the Federal Government has set the pace, it would seem most resonable that the States should accept the National law as their model.

The portions of the law especially referring to drugs are as follows:

"SEC. 6. That the term 'drug,' as used in this Act, shall include all medicines and preparations recognized in the United States Pharmacopœia or National Formulary for internal or external use, and any substance or mixture of substances intended to be used for the cure, mitigation or prevention of disease of either man or other animals.

"SEC. 7. That for the purpose of this Act an article shall be deemed to be adulturated:

"First. If, when a drug is sold under or by a name recognized in the United States Pharmacopœia or National Formulary, it differs from the standard of strength, quality or purity, as determined by the test laid down in the United States Pharmacopœia or National Formulary, official at the time of investigation.

"Provided that no drug defined in the United States Pharmacopœia or National Formulary shall be deemed to be adulterated under this provision if the standard of strength, quality or purity be plainly stated upon the bottle, box or other container thereof, although the standard may differ from that determined by the test laid down in the United States Pharmacopœia or National Formulary.

"Second. If its strength of purity shall fall below the professed standard or quality under which it is sold.

"SEC. 8. That the term "misbranded," as used herein, shall apply to all drugs or articles of food, or articles which enter into the composition of food, the package or label of which shall bear any statement, design or device regarding such article, or the ingredients or substances contained therein which shall be false or misleading in any particular, and to any food or drug which is falsely branded as to the State or Territory, or country in which it is manufactured or produced.

"That for the purposes of this act an article shall also be deemed to be misbranded;

"In the case of drugs:

"First. If it be an imitation of or offered for sale under the name of another article.

"Second. If the contents of the package as originally put up shall have been removed, in whole or in part, and other contents shall have been placed in such package, or if the package fail to bear a statement on the label of the quality or proportion of any alcohol, morphine, opium, cocaine, heroin, alpha- or beta-eucaine, chloroform, cannabis indica, chloral hydrate or acetanilide, or any derivative or preparation of any such substance contained therein.

"SEC. 9. That no dealer shall be prosecuted under the provisions of this act when he can establish a guaranty signed by the wholesaler, jobber, manufacturer, or other party residing in the United States, from whom he can purchase such articles, to the effect that the same is not adulterated or misbranded within the meaning of this act, designating it; such guaranty to afford protection, shall contain the name and address of the party or parties making the sale of such articles to such dealer, and in such case said party or parties shall be amenable to the proscution, fines and other penalties which would attach, in due course, to the dealer under the provisions of this act."

The penalties for violation of the provisions of the new law are rigorous ones, indicating that Congress is in earnest and expects to have the pure food and drug law enforced. A violation constitutes a misdemeanor, and for the first offense the penalty is not to exceed $500 or one year's imprisonment, or both fine and imprisonment; for subsequent offenses the penalty will not be less than $1,000 or one year's imprisonment, and it may be both, for each offense.

The law will effect all inter-state trade in drugs and medicines, and sales in the territories, the insular possessions, and the District of Columbia. The sale of drugs and medicines within the respective States by the retail druggist over his counter will be governed by the State law, and not by the new Federal statute.

Congress also passed a law to authorize the use of untaxed denatured alcohol. While the pharmacist has but little direct interest in this measure, it may enable the manufacturers in many lines, including chemicals to compete in foreign markets and possibly make available a new, valuable and economical fuel.

We regret to say that the Mann Bill to amend the patent laws did not make the progress its friends had hoped for, and it is still hung up in the lower house of Congress.

Congress passed a pharmacy law for the District of Columbia, including elaborate provisions for the regulation of the sale of poisons and narcotics. The narcotic provisions are very similar to those of the Chicago Model Bill (which was based upon the model bill approved by this Association three years ago) and the provisions concerning poisons follow very closely in the provisions of the Ohio Poison Law of 1902.

At the late session of the Massachusetts Legislature a label law was passed somewhat less comprehensive than the National Law; but this action was taken before it was known what Congress would do.

In Maryland a bill to regulate the sale of narcotics was passed after much controversy. The bill follows closely the "Chicago Model Bill," except that the morphine limit is fixed at two-fifths of a grain instead of one-fourth grain per ounce; and there are a few other minor changes.

In Rhode Island a somewhat similar bill was passed, in which the opium limit was increased from two grains to six grains per ounce; which we believe was due to the desire not to interfere with the sale of laudanum.

The Georgia Legislature, which recently adjourned, passed an elaborate pure food and drug law most of which is in close conformity with the National Law.

In Mississippi, during the late session of the Legislature, there was an agitation for a law regulating the sale of proprietary medicines containing alcohol, the final outcome of which was a very curious enactment which provides: That the sale of any proprietary medicine which "if drunk to excess will produce intoxication," shall be deemed to be a sale of intoxicating liquors *unless* a facsimile of a certificate by the Commissioner of Internal Revenue is attached to each bottle showing that the medicine does not contain enough alcohol to make its sale unlawful without an Internal Revenue license; and (to guard against an unfortunate contingency) it is also provided that, if the Commissioner refuses to examine the medicine and make such certificate, a fac-simile of an affidavit, by the proprietor or by some citizen of Mississippi interested in the sale of the preparation, stating that the Commissioner had refused to examine the medicine and make the certificate, shall have the same effect as if the Commissioner had made the certificate. We have not quoted the exact language of the law, but have given its substance.

At the late session of the Louisiana Legislature a bill was passed, over the protest of all branches of the drug trade, practically conferring legislative power upon the State Board of Health in the regulation of the manufacture and sale of drugs.

In New York a great effort was made to force through the Legislature a bill conferring upon the Board of Health extended jurisdiction over the drug trade. Our brethren in New York combatted this attempt with great ability and energy, and it was finally defeated—as was the attempt to enact a similar law in two or three other states. The professions of medicine and pharmacy are very closely allied, and our personal relations with members of the medical profession should always be of the most cordial character. But this desirable condition of affairs is entirely consistent with a determination to uphold at all times the rights and dignity and independence of our own profession.

Having called attention to these attempts on the part of certain elements in New York and other States to humiliate not only the Boards of Pharmacy but the entire profession of Pharmacy, we reiterate our warning of last year against the constant effort of another class of people—we refer now to the political agriculturists in the various States —to grasp similar powers and to extend their control over the drug trade. We are threatened now on both sides, and the time has come when pharmacists must fight for the rights and dignity of their profession and resist to the utmost the efforts to subordinate it to the control and caprice of medical men on the one hand or of Dairy and Food Commissioners on the other. It is all well enough for these agriculturalists to look after butter and eggs and cattle and fertilizers; but every attempt to bring the profession of pharmacy within their control should be resisted to the utmost. What a stir our medical friends would make if it was proposed to put professional agriculturalists in charge of the medical profession!

This whole subject should receive the earnest attention of every pharmacist, for there is certain to be an effort in many States during the coming winter to pass pure food laws, and unless all signs fail the agriculturists will be out in full force demanding the right to supervise and regulate our business.

A notable event of last year was the assembling of representatives of all branches of the drug trade in what was called the "Chicago Conference" to consider the question of legislation to regulate the sale of narcotics and of proprietary medicines containing alcohol. Prof. Beal, who was a member of this conference, will submit a paper upon the work done.

In connection with anti-narcotic legislation we call attention to the persistent effort in certain quarters during the last one or two years to saddle upon druggists and the drug trade in general the chief responsibility for the prevalence of the "drug habit," and to slur over or totally ignore the real source of this evil." This also is something which should be most earnestly resented by every self-respecting pharmacist. Every one of us knows that in 95 cases out of every 100 the victim of the drug habit owes his first start downward to the prescription of some physician. There has been a persistent effort in certain quarters to keep this fact in the background, but every one of us knows that it is the truth, and we should have the courage to stand up and say so. There is nothing gained by shirking a duty or blinking a fact. There are some bad patent medicines which should be driven from the market, and we should help to do it, but this fact should not be allowed for one instant to obscure the far more important fact that the evils of the drug habit will never be eliminated until there is a widespread reform in the ranks of the medical profession, many of whose members are so largely responsible both for the creation and perpetuation of these evils, and we should see to it that the public is no longer misled in this matter.

At our last meeting the jurisdiction and scope of the Legislative Committee was very largely extended. It was formerly a Committee upon National Legislation only, but last year the Association voted to make it a Committee on both State and National Legislation. We believe it would be desirable, and we therefore recommend that the membership of the committee be increased to five, and that the committee be authorized to choose its own officers.

FRANK C. HENRY,
HENRY CANNING,
ALBERT E. EBERT,
Committee.

Mr. Wilbert, stating that he understood the adoption of the report to carry the recommendations with it, moved to adopt, and the motion was seconded by Mr. Lowe and carried.

The Secretary stated that Mr. Seabury, Chairman of the Committee on Status of Pharmacists in the Army and Navy, and Marine Hospital Service, had written him that it was impossible for him to be at the meeting. The report is as follows:

REPORT OF COMMITTEE ON STATUS OF PHARMACISTS IN THE ARMY, NAVY AND HOSPITAL SERVICE.

Your Committee reports that while there was no opportunity to accomplish practical results in the last session of Congress it has succeeded in discovering the causes that have prevented any successful movement in obtaining adequate rank and compensation for practitioners of pharmacy.

Your Committee considers it impolitic to discuss or explain the causes of failure which might tend to retard our progress or compromise our future excellent prospects. Therefore we deem it prudent at this juncture to merely report progress. Yet it can be stated that receiving rank and compensation commensurate with the responsibility involved in the practice of pharmacy will be conceded at no distant date.

The Medical Service Corps has had trials and tribulations of its own to encounter. Its chiefs in each department are active, vigilant and progressive. Their just recommendations for increasing the efficiency of its service have only in the last session of Congress received recognition. A long list of improvements are contemplated for the connective professions. Pharmacy will receive its share of attention in the reformatory work. An army pharmacy formation is subordinate to the medical staff, and before we can expect to obtain success, it must be through their sympathy and co-operation.

It has required active agitation for several years on the part of the medical staff to obtain relief from retrogressive methods, and it is doubtful if they would have been successful had it not been through the personal influence of the President. We, too, must be patient under the reorganization and abide our time in order to accomplish our ends. We will obtain them only by unswerving firmness, and if need be we shall maintain our position aggressively. We believe that it will come as a voluntary act.

This Committee, as now formed, becomes a natural power. The president of each State Pharmaceutical Association becomes a unit of membership. Collectively, our influence through state delegations must, of necessity, aid our national interests when striving for altruistic, just or protective measures.

The soldier in the regular or state service who stands ready to defend the law or the flag of his country, is entitled to the best medical or pharmaceutical service to be found in the United States.

Considering the power that lies in the formation of this Committee, we hope that its present form will be continued until its work is completed, changing only the names of the State Presidents; the balance of the committee is subject to the usual methods of appointment.

A bill is to be drawn up at the next session of Congress and presented for prompt action to both Congressional Committees. We will have the moral and active influence of the Medical Corps in support of a practical measure that will strengthen their service by securing properly qualified graduates and licentiates of pharmacy.

We shall continue our task until the Government realizes the fact that pharmacy is a most exacting profession, and that its representatives in the service of the United States on land and sea are entitled to adequate rank and compensation.

(Signed) J. H. Beal,
George F. Payne.
George J. Seabury, *Chairman.*

The Chair stated that without objection the report would take the usual course, and it was so ordered.

The Secretary requested Mr. Whelpley, a member of the committee, to present the report of the Committee on Publicity, in the absence of the Chairman, Mr. E. H. Gane.

Mr. Whelpley stated that this was a new committee, appointed by the President in accordance with the action of the Association last year; that the purpose was to bring the American Pharmaceutical Association more prominently before the pharmacists of the country. Chairman Gane had been quite active, he said, and while the results this year, so far as publicity was concerned, had not been great, Mr. Gane had succeeded in outlining a plan of action which he was confident would enable the present committee's successors to accomplish the purpose in view. He said the report was quite voluminous, and it was hardly necessary to read it, but that there was nothing whatever in it that the Association would not heartily approve. The text of the report here follows:

REPORT OF THE COMMITTEE ON PUBLICITY.

Your Committee on Publicity has been mainly occupied during the year with outlining a practical plan of campaign.

It was deemed best at the outset for the President of the Association to appoint a committee of three to formulate a plan and to act as a general directing committee, this committee to have power to appoint sub-chairmen in the different States subject to the approval of the President.

The plan of campaign finally decided upon is embodied in the accompanying circular, which it was deemed advisable not to furnish to the press for publication. The main features, however, will be found in the report of the sub-committee of the Council, presented to the latter at the Atlantic City meeting and published in the first issue of the Bulletin.

OUTLINE OF THE WORK OF THE COMMITTEE ON PUBLICITY.

In order to increase the sphere of usefulness of the A. Ph. A. to pharmacists generally, a committee on publicity has been established, the general duties of which were outlined in the report of a special committee of the Council presented at the Atlantic City meeting and published in the first issue of the A. Ph. A. Bulletin.

The chief work of this committee will be the inauguration of a campaign in the daily press, (first) to keep prominently before the public the special usefulness of the pharmacist to them; (second) to refute immediately inaccurate and mendacious references to matters in which druggists are interested; (third) to keep the public warned against dangerous adulterations, such, for example, as the use of wood alcohol in preparations for internal use, and to point out the necessity of the public confining their purchases to reputable pharmacists; (fourth) to keep watch on the reports of the State food and drug bureaus, and to correct the misleading conclusions frequently drawn therefrom; (fifth) to warn the public against palpable frauds in medicine, and to prevent as far as possible the fraudulent exploitation of the latest advances in science. Finally, it should be possible to furnish the daily press from time to time with short notes of general scientific interest which would tend to increase the sale of legitimate pharmaceutical or hygienic products.

To carry out this work properly the committee proposes to form a series of local sub-committees so as to secure prompt action, which is so needful in those matters relating to the drug trade which come up for notice in the daily press.

The General Committee on Publicity suggests the following plan of campaign to chairmen of sub-committees:

(1) Get in touch with your local newspapers and news bureaus by notifying them of your appointment as local representative of the A. Ph. A. and requesting them to consult you when matters of pharmaceutical interest are under discussion in the public press.

(2) Whenever you see an article in your local paper referring to the drug trade or to any member of it in a critical spirit reply immediately, correcting any mistatements and pointing out such efforts as are being made in your State or by the A. Ph. A. to improve conditions in the trade. Sign such communications with your name, appending thereto the words "Committee on Publicity of the American Pharmaceutical Association."

(3) From time to time as occasion warrants, send your local papers notes of general interest or comments on such matters as come under the various headings mentioned above. Sign your communication, as above.

(4) Keep the chairman notified of the work of your State Food and Drug Bureau or Health Board, sending copies of reports when issued and early notice of any special activity in your locality.

(5) To assist you in the work select a number of associates in your town or State, empowering them to do similar work in their respective localities. Such associates to be members of the A. Ph. A. and approved by the General Committee and the Council of the Association.

(6) Ask your associates to send you clippings from their local papers dealing with matters affecting the drug trade and forward these to the chairman, taking action thereon beforehand if necessary.

(7) Should any controversy arise in a town where there is no member of your Committee, appoint some member of the A. Ph. A. if possible, immediately, and empower him to take action at once in the name of the Association.

The Committee find that on numerous occasions in the past druggists have been restrained from taking notice of attacks on the trade in the public press from fear that the public might gain the impression that the individual writer was feeling the "pinch of the shoe" and that he would thereby suffer in reputation. By taking notice of such attacks in the name of the A. Ph. A. such fear would be banished, and the retail trade would feel that the A. Ph. A. was taking an active interest in the welfare of the whole trade. Such action would do much to stimulate interest in the work of the A. Ph. A. and, it is hoped, add largely to its membership.

Signed,
C. A. Mayo,
H. M. Wheepley
E. H. Gane, *Chairman.*

In addition, Dr. Whelpley made the following suggestions which were carried out as far as possible:

1. Write to the President of each state association about a month before his State annual meeting, urging him to mention the A. Ph. A. in his address. Send him a reprint of Ex-President Beal's address.

2. Write the secretary of each association about the same time as the president, inviting the association to be well represented at the Indianapolis meeting, calling attention to the provision for delegates to the A. Ph. A. from other organizations.

3. Write at least one prominent A. Ph. A. member in each state urging him to talk up the A. Ph. A. in open meeting. Offer him reprints of Ex-President Beal's address for distribution, ask him to see that some one has a copy of the proceedings at the meeting so that it can be exhibited. Ask him to urge other A. Ph. A. members in the state to talk about the A. Ph. A. at the state meeting.

It is hoped that this work may be further systematized in the future.

Up to the present time the Committee has only been able to secure the consent of a few members to act in their respective states. Mr. C. A. Mayo has been appointed subchairman for New York State, and is endeavoring to form a local committee to act with him. Dr. Whelpley has consented to act in the same capacity for the state of Missouri; Mr. G. M. Beringer, for New Jersey; Mr. C. A. Rapelye, for Connecticut; Professor C. S. N. Hallberg, for Illinois and Mr. E. G. Eberle for Texas. The Committee has not been successful in securing the consent of our most active members to act in their respective states, and inasmuch as we deem it essential for the best interests of the association and of Pharmacy in general that only the most prominent of our members should serve in this capacity, further appointments have been deferred for the present.

The Committee would call especial attention to the work done by Professor Hallberg on behalf of the Chicago pharmacists through the medium of the local press. It will be remembered that mainly through his efforts the Chicago press was compelled to withdraw derogatory statements in reference to pharmacists and to publish an article which showed the latter in their true light. This work is peculiarly within the province of the Committee. It is hoped that additional newspaper articles similar to those accompanying this report may secure publication in the daily press through the efforts of this Committee, and also articles dealing more with the scientific side of pharmacy.

It is hoped further that by drawing the attention of local and State Boards of Health, Food and Dairy Commissions, etc., to the practical side of pharmacy, to the varying standards for similar preparations, the possibility of changes in strength from different causes and to the technical errors liable to be committed by analysts unfamiliar with pharmaceutical problems, to avoid in this way some of the vexatious prosecutions and consequent injury to reputation which some of our confreres have unjustly suffered. This work should be carried out in conjunction with the Committee on the Drug Market. The necessity for it is more and more apparent owing to the new pure food and drug law and to the increasing activity of various local and State officials.

The committee further ventures to express the hope that it may be the means of furthering the cordial relations which should exist between the professions of medicine and pharmacy, and of keeping the former posted on pharmaceutical matters of interest to them by occasional contributions to the medical press.

Respectfully submitted,

H. M. Whelpley,
Caswell A. Mayo,
E. H. Gane,
Chairman.

On motion of Mr. Apple, seconded by Mr. Claus, the report was ordered received, to take the usual course.

The Secretary stated that he had in his hands the report of the Committee on President's Address, but that it had better come in at the next session, this being an adjourned session only.

Chairman LaWall made the following report for the Committee on Weights and Measures.

REPORT OF THE SPECIAL COMMITTEE ON WEIGHTS AND MEASURES.

To the President and Members of the American Pharmaceutical Association:

The Committee on Weights and Measures, which has now existed for more than a decade, and the primary object of whose existence is the furthering of legislation leading to the compulsory adoption of the Metric System, has had a continual up-hill struggle against obstacles which have, up to the present time, successfully prevented the accomplishment of the purpose for which it was formed.

When in 1896, the Hon. Charles W. Stone, then chairman of the House Committee on Weights and Measures, introduced a bill which passed successfully to a third reading, but which was finally reconsidered and referred back to the committee, the members of the American Pharmaceutical Association, who listened to the annual report of the Chairman of the Committee on Weights and Measures, Mr. Frank G. Ryan, whose untiring efforts for many years served to bring the subject into the prominence which it deserves, no doubt felt it would be but a short time until the work for which the committee had been appointed would be accomplished.

It is fairly evident at this time that the strength of the opposition was underestimated. Ten years have passed. Congresses have come and gone. Bills have been introduced upon several occasions; in 1900, two bills were submitted at once, one in each legislative body, and the same determined opposition is still at work, blocking the efforts of the committee, and unfortunate to relate, in some instances aided by some of our own members.

Friends of the proposed bills have not been lacking, but the antagonism which has developed along certain lines has become so strong that, at the present time, the outlook for the passage of such legislation is certainly very unfavorable.

A bill was presented in the House of Representatives at the last session of Congress by the Hon. Lucius N. Littauer, of New York. It read as follows:

A Bill

To fix the standard of weights and measures by the adoption of the metric system of weights and measures.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled: That from and after the first of July, nineteen hundred and eight, all of the departments of the Government of the United States, in the transaction of business requiring the use of weights and measurement, shall employ and use the weights and measures of the metric system.

Those who are familiar with the former bills which have been introduced will remember that "the measurements in the survey of public lands" were heretofore excepted, which has not been the case in the present bill.

The principal opposition, however, has come from the manufacturers of machinery and machine tools; and the Engineering Magazine for May contained an article on the subject which was widely copied in various journals. The author, Mr. H. H. Supplee, presents the arguments of these opponents to the adoption of a system which he claims has not been demanded by any one who has anything to lose, and which is absolutely incommensurable with our present system, so that in the event of its adoption, to quote the author's own words, "it would require 50 years of endless confusion and double-standard working to clear the deplorable and expensive wreckage out of the shops."

There were arguments of this kind used in the hearings before the House Committee, which had the matter under consideration, and while there were others who testified to the fact that no serious inconvenience would result, the opposition again triumphed, and the bill remained in the hands of the committee.

In taking up the work of this year for the American Pharmaceutical Association, the chairman of the present committee sent out letters to each member of the committee, forty-five in all, calling attention to the foregoing bill and asking for co-operation in obtaining legislative interest in the matter. Replies were received from but four, of which number two expressed disapproval of the aims of the committee, thus indicating the fact that in our own Association we are not yet working as a unit in the furtherance of a cause which has always seemed to be for the best interests of the profession.

In consequence of these rebuffs the chairman has taken the opportunity to interview a number of authorities with reference to the subject. Physicians, retail druggists and manufacturers have been consulted, and after obtaining all possible light on the subject it seems that the lack of concerted effort is due to the combined effect of a number of causes, as follows:

1. The lack of interest displayed by the medical colleges in the practical application of the subject.

2. The erroneous impression among physicians who are qualified to write prescriptions in the metric system that very few druggists can compound them properly.

3. The use of alternate quantities in the National Formulary and in various text-books and commentaries on the United States Pharmacopœia.

4. The controversy which has arisen as to the proper teaspoon and tablespoon equivalents.

When all of these causes have been eliminated and the committee from the American Pharmaceutical Association can show that it is a unit for the adoption of appropriate legislation in this matter, it will be possible to accomplish much more than has been done in the past, and then only will the efforts of this great Association be rewarded by the accomplishment of the task for which this committee was appointed.

CHARLES H. LAWALL, *Chairman.*

On motion of Mr. Roehrig, the report was received to take the usual course.

Mr. Remington here asked permission to present a paper he had prepared entitled, "The Eighth Revision of the Pharmacopœia," which he said he had not presented heretofore on account of a lack of time to give to it. He read the paper as follows:

THE EIGHTH REVISION OF THE U. S. PHARMACOPŒIA.

BY JOSEPH P. REMINGTON, CHAIRMAN.

The Eighth Revision of the U. S. Pharmacopœia having been issued for a year and comments and criticisms having been received from all parts of the world, it would seem proper at this time for the Chairman of the Committee to present some facts in connection with the revision which may be of interest and aid future Committees of Revision. The work of collecting comments from the pharmaceutical journals and elsewhere and arranging these for study and improvement is going forward, but it might be well at this time to offer some considerations for the next revision based upon the experience derived from this one.

Much has been said about the method of selecting the members of the Committee of Revision, and as is well known the consensus of opinion is that twenty-six members form too large a number for smooth working and permitting decisions to be reached within a reasonable time. There is no doubt that before the time for the convention in 1910 a better plan for doing the work will be proposed. The delays in issuing the last Pharmacopœia became very irksome to not only the Committee of Revision but to the country generally. The reasons for this delay have been so amply set forth in previous communications that it does not seem necessary at this time to more than touch upon them. It is interesting to look back now, read, and listen to the communications of those who were unfamiliar with Pharmacopœial revision but who nevertheless suggested plans for the betterment of the problem. One writer with a comprehensive instinct proposed that every State Pharmaceutical Association, every Medical Society or organized medical body, present a report upon the revision, and that during its progress, each body should receive complete information about the work and be given a chance to object or approve of each step taken. If the work of Revision conducted by twenty-six recognized authorities in some branch of the work, required five years to reach conclusions, how long would it take this larger committee composed of forty State Pharmaceutical Associations, forty State Medical Societies, with five or six National Associations, together with the departments of the government, to reach conclusions?

Dr. Charles Rice, former Chairman of the Committee of Revision was deeply impressed in 1900 with the necessity for a change in the method of conducting the revision. At that time, he more than any other man in the country knew that a simpler plan should be devised, and if his health had permitted him to be present at the convention of 1900 he would have used every effort to have induced the convention to reduce the number of the Committee, and simplify the method.

If it were possible to conduct the revision by having monthly meetings, together with correspondence by letters, a large number of the more important questions could be decided through personal discussion, and much time would be saved; but with a Committee of twenty-six scattered all over the United States, it must be apparent that traveling and hotel expenses at such meetings would consume in one year about ten thousand dollars.

With a Pharmacopœia of the scope we have at present, it would be impossible to complete the revision in one year. The number composing the Committees of Revision prior to 1860 was much smaller than at present as will be seen by the following: The 1820 committee consisted of five physicians; 1830, seventeen physicians; 1840, seven physicians; 1850, eight physicians and two pharmacists; 1860, five physicians and four pharmacists; 1870, ten physicians and five pharmacists; 1880, eleven physicians and fourteen pharmacists; 1890, nine physicians and seventeen pharmacists; 1900, eight physicians and eighteen pharmacists. In this list the word "physicians" includes those who are medical practitioners or engaged in teaching medicine, and "pharmacists" includes those identified with pharmaceutical pursuits or engaged in teaching some branch of pharmaceutical education.

From 1820 to 1880 it was possible to hold regular meetings because the average for these years of the number on the committee was eleven, but in 1880 the number of the Committee was enlarged to twenty-six and has remained so until the present time.

In each revision the work of editing the book and preparing it for the press devolved on the Chairman. It was his duty to harmonize divergent views, represent the views of the majority of the committee and reach conclusions.

The experience of the last five years proves that it is quite a task to finally get a vote which will always represent such a desideratum. When a question is laid before the committee in a circular, some members have very pronounced views; in such cases the vote is quickly returned, and the Chairman congratulates himself that the question will soon be settled; later on a member proposes a modification, and some member writes he will vote "Yes" if something else is added or taken out. After waiting ten days for the distant parts of the country to be reached and the vote returned, the question must go again before the committee with a circular expressing the views of each member. The Chairman must then endeavor to show a way by which a majority can agree upon a satisfactory decision. A circular is then sent, and if the vote is not decisive, another ten days is consumed in settling the question.

When the writer was elected to fill the vacancy caused by the death of Dr. Charles Rice on May 13th, 1901, one year had been consumed in organizing committees and deciding upon the preparations which were to enter into the Pharmacopœia and those which were to be dismissed. A good deal of the time of Chairman Rice was consumed in parliamentary work, organizing the sub-committees, attending to the detail connected with the charter and reorganizing the whole work, and separating the strictly business part of the work from that of the actual revision.

While the convention of 1900 settled many knotty questions, many others were left for the Committee of Revision, and in the meantime enormous additions to the Materia Medica had been accumulating, and notwithstanding the experience and ability of Dr. Rice, at the time of his death the work of framing the list for admission and rejection had not been finally completed. This was largely due to the difficulty of getting twenty-six men to reach a definite agreement upon the admission or rejection of more than one thousand substances.

If in addition the votes of the representative medical and pharmaceutical institutions, associations, etc., throughout the country had been required before reaching decisions, it is plain to see that the Pharmacopœia would not have been out to-day.

The chairman of the committee desires to express his great appreciation of the work of the present committee. When it is considered that each man was busy with his own daily work, that he could not afford to lay aside his daily duties and give his whole time to the work of revision and that this labor of love was often carried on at a great sacrifice of his time and strength, it must be seen that the generally satisfactory character of the U. S. Pharmacopœia was reached after vast labor, and that the revision was accomplished as soon as it was (when all the facts are considered) is a subject for much congratulation.

A comprehensive report giving briefly the views of pharmaceutical and medical journals, writers, chemists, botanists and others interested, is in active preparation, but at this time the chairman desires to state that the favorable comments vastly exceed the unfavorable criticisms. A few errors mainly in specific-gravity figures or test requirements have been pointed out, and the plates have been cut and alteration has been made; but such have been comparatively unimportant, and no error has been pointed out which would affect any interest seriously.

When it was foreseen that a change in the strength of some of the tinctures might cause serious results, as in the cases of tinctures of aconite, veratrum, strophanthus, etc., ample notice was furnished to the pharmaceutical and medical press sometime before the issue of the work, and the absence of any reported untoward results up to the present time must be attributed to the willingness of the editors of the journals to print conspicuously in their papers advance notices of the changes.

In no previous revision of the Pharmacopœia were manufacturers of chemical, animal, and pharmaceutical products consulted to the extent that they were in the eighth revision. Not only was there a voluminous correspondence by the chairman, but the chairman of the various subcommittees diligently consulted manufacturers of special products, in order to be fully acquainted with their views, and facts were obtained upon which to base the standards. Necessarily the views of manufacturers were often found to differ from those of others manufacturing the same product. In such cases a decision was reached without fear or favor and the interests of the country as a whole was the only consideration. It would seem to be unnecessary to make this statement, but a communication received lately by the chairman from one of the pharmaceutical journals made it necessary for the chairman to make an explanation, and this is repeated here.

It may be interesting to this Association which has always taken a prominent part in the work of revision, to state that in comparison with the work done on the 1890 Pharmacopœia as shown by the circulars issued by its chairman, that the work upon the eighth revision was far in excess of its predecessor.

The chairman of the 1890 committee issued 300 circulars containing 1,359 pages. The number in the eighth revision were 634 numbered circulars and the pages 2,277, with 370 pages of lettered circulars in addition, making a total of 2,647 pages. It will be observed that the total number of pages was practically double that of the 1890 revision. The comparison, however, is not complete unless the size of the pages of the circulars is compared. In the 1890 revision, the hectograph was used as a means of communicating information to the members; by taking a full page of one of these circulars, the number of words on the page was found to be 399. In the eighth revision mimeographed circulars were used because it was found that they were more easily read, and about thirty-three per cent. more words (542) could be used on a page, with a great saving of expense in postage.

Some idea of the increased work may be obtained by comparing the amount of words in communicating with the members of the 1890 revision with those of the eighth revision; based upon the above figures the number of words for 1890, would be 542,241 and for the eighth revision, 1,665,618. These figures do not include the type-written letters and reports which passed between the members of sub-committees, particularly the Assay Committee, nor correspondence with manufacturers, experts, or private correspondence between the chairman, individual members of the committee, and others, on the work of revision. As can readily be surmised these would be represented by very large figures.

This paper is presented to the Association at this time because the publication of these facts is certainly due to the committee who labored so long and faithfully at their task and were severely censured for delaying the issue of the Pharmacopœia; it should set at rest the criticism made by many who necessarily were unaware of the scope and magnitude of a work which involved so many details requiring care and time to investigate.

Mr. Sheppard moved to receive the paper, with the thanks of the Association to Mr. Remington for giving these data. He thought the paper a valuable one to spread upon the records, because there was no other place where these facts could be found so succinctly stated.

The motion was seconded by Mr. Roehrig, and carried.

The Secretary called for the report of the General Committe on Membership and Reception, which was read by the chairman, Mr. Mittelbach. The following is the full text of the report:

REPORT OF GENERAL COMMITTEE ON MEMBERSHIP AND RECEPTION.

Your Committee has been busy since the Atlantic City meeting, and is pleased to report that its efforts in building up the membership of our Association is crowned with success. The enrollment of new members since the last meeting up to September 1st, is 190, a nice increase over any previous year. The assistance rendered the committee by local branches of our Association, in several of the large cities has been of great benefit, and your committee recommends this plan be encouraged and the formation of additional branches be carried out. Your committee desires to make special mention of the Chicago branch, and its work. That body has secured about 70 new members this year; which proves what can be done by systematic work. We are proud of our Chicago hustlers, and they are no doubt proud of themselves, for by their efforts they have not only helped the Association at large, very materially, but have placed their city second in point of membership. Two years ago they occupied 5th place. The loss of members each year, by resignation and suspension is a matter needing the serious attention of the Association. Steps should be taken to check this loss, if possible; out of 91 suspensions as reported in the 1905 proceedings, 59 had been elected in 1902, having paid only one year's dues, out of 33 resignations reported at the same time, 3 were elected in 1902, 5 in 1903, and 7 in 1904. This condition indicates that we sometimes persuade parties to make application, that really don't intend to remain, such a membership is not desireable. The following list of resignations and suspensions, tabulated from the proceedings of the past 5 years, showing the year in which these parties were elected, indicates very clearly, that the critical period of membership is the first 3 years:

RESIGNATIONS AND SUSPENSIONS FROM 1901 TO 1905 INCLUSIVE.

Elected.	1905.		1904.		1903.		1902.		1901.		Totals.	
	R.	S.	R.	S.	R.	S.	R.	S.	R.	S.	R.	S.
1904	7	....	....	....	....	....	....	....	....	....	7	
1903	5	....	7	....	....	....	....	....	....	....	12	
1902	3	59	7	....	13	....	....	....	....	....	23	59
1901	1	6	6	32	4	....	5	....	....	....	16	38
1900	1	7	3	8	1	11	5	....	2	....	12	26
1899	2	....	....	1	....	....	....	18	2	....	4	19
1898	....	2	2	3	1	6	4	6	2	18	9	35
1897	2	2	4	1	2	5	2	4	2	8	12	20
1896	....	1	....	1	....	2	2	....	2	9	4	13
1895	1	1	3	3	2	3	....	3	3	6	9	16
1894	3	3	2	1	....	6	1	1	4	3	10	14
1893	2	3	1	1	....	1	2	2	1	5	6	12
1892	....	2	....	3	....	2	5	5	6	7	11	19
1891	....	....	1	2	1	2	1	1	2	2	5	7
1890	....	2	....	....	....	1	....	1	3	1	3	5
1889	....	....	....	1	1	2	....	....	4	....	5	3
1888	....	....	....	....	....	2	....	2	1	4	1	8
1887	....	1	....	1	1	1	....	....	1	1	2	4
1886	....	....	....	....	1	....	1	....	....	1	2	1
1885	1	....	....	....	....	....	....	1	....	2	1	3
1884	....	....	1	1	....	....	....	....	....	1	1	2
1883	....	....	....	....	....	1	....	....	....	2	....	3
1882	1	1	1	....	....	1	....	3	1	2	3	7
1881	1	....	1	....	....	....	1	1	2	....	5	1
1880	2	....	1	1	....	....	....	....	3	....	6	1
1879	....	....	....	....	....	....	2	....	....	....	2	
1878	....	....	....	....	....	1	....	....	....	4	....	5
1877	1	....	....	....	1	....	....	....	....	....	2	
1876	....	1	1	....	1	1	1	3	1	....	4	5
1875	....	....	1	....	....	....	1	....	1	1	3	1
1874	3	....	....	....	....	....	....	1	....	....	3	1
1872	....	....	1	....	....	....	....	....	....	....	1	
1871	2	....	....	....	....	....	....	....	1	2	3	2
1870	....	....	....	....	....	....	....	1	....	....	....	1
1869	....	....	....	....	....	....	....	1	....	....	....	1
1868	....	....	1	....	....	1	....	....	....	....	1	1
1867	....	....	....	1	....	....	....	....	....	....	....	1
1861	....	....	....	1	....	....	....	....	....	....	....	1
Totals .... R.	38	....	44	....	29	....	33	....	44	....	188	
Totals .... S.	....	91	....	62	....	49	....	54	....	79	....	335

MEMBERSHIP, SEPTEMBER 1, 1906.

As reported September 1, 1905	1,776
Enrolled during the 1905 meeting	53
Total	1,829

Loss as stated in the 1905 Proceedings:

By death	22	
By resignation	38	
By suspension	91	
Total		151
Net membership at close of 1905 meeting		1,678
Increase since the close of 1905 meeting and enrolled in the 1905 Proceedings		65
Elected since the publication of the Proceedings Nos. 65 to 190		125
Membership September 1, 1906		1,868

To this must be added those that will be elected at this year's meeting, and deduct the loss by death, resignation and suspension this year to show the correct status at the end of the present administration.

The attached table of membership by years, and list of old members whose membership was acquired previous to 1862, will be of interest to many.

MEMBERSHIP ARRANGED BY YEARS OF THEIR ELECTION.

United States.						Canada.		Foreign Countries.	
Year when elected.	No. of Members.	Year when elected.	No. of Members.	Year when elected.	No. of Members.	Year when elected.	No. of Members.	Year when elected.	No, of Members.
1853	1	1871	8	1889	8	1860	1	1863	1
1854	1	1872	8	1890	30	1862	1	1872	1
1855	2	1873	11	1891	18	1876	1	1875	1
1856	2	1874	3	1892	52	1883	1	1891	1
1857	6	1875	18	1893	33	1888	3	1895	1
1858	5	1876	20	1894	39	1890	1	1903	3
1859	11	1877	5	1895	30	1894	1	1905	1
1860	9	1878	8	1896	31	1897	1		
1861	1	1879	16	1897	37	1900	1		
1862	0	1880	17	1898	35	1902	1		
1863	6	1881	16	1899	35	1903	1		
1864	4	1882	21	1900	60	1904	4		
1865	9	1883	17	1901	91	1905	1		
1866	7	1884	5	1902	177				
1867	17	1885	16	1903	200				
1868	4	1886	14	1904	205				
1869	13	1887	24	1905	266				
1870	5	1888	23						

LIST OF AMERICAN PHARMACEUTICAL ASSOCIATION MEMBERS THAT JOINED PREVIOUS TO 1861.

1853. William Wells Goodwin, Newburyport, Mass.
1854. William John Maclester Gordon, Cincinnati, O.
1855. Alpheus Phineas Sharp, Baltimore, Md.
1855. Robert Restieaux Kent, New York, N. Y.
1856. James Augustin Lee, New Iberia, La.
1856. Thomas Roberts Baker, Richmond, Va.

1857. P. C. Candidus, Mobile, Ala.
1857. Oscar Edwin Gale, Chicago, Ill.
1857. William Henry Gale, Chicago, Ill.
1857. Evan Tyson Ellis, Philadelphia, Pa.
1857. Edward Hance Hance, Philadelphia, Pa.
1857. Thomas Snowden Wiegand, Philadelphia, Pa.
1858. Ichabod Bartlett Patton, Boston, Mass.
1858. Enno Sander, St. Louis, Mo.
1858. Joseph Lyon Lemberger, Lebanon, Pa.
1858. Joseph Augustus Heinzelmann, Philadelphia, Pa.
1858. William Beatty Thompson, Philadelphia, Pa.
1859. James G. Steele, San Francisco, Cal.
1859. Richard Henry Land, Augusta, Ga.
1859. Noah Sparhawk Harlow, Bangor, Me.
1859. Louis Dohme, Baltimore, Md.
1859. Henry Alexander Elliott, Baltimore, Md.
1859. Thomas Doliber, Boston, Mass.
1859. Benjamin Osgood Wilson, Boston, Mass.
1859. Joel Stone Orne, Cambridgeport, Mass.
1859. John Francis Rollins, Dover, N. H.
1859. James Theodore King, Middletown, N. Y.
1859. John Ferdinand Grossklauss, Nevarre, O.
1860. Giles G. C. Simms, Washington, D. C.
1860. Benjamin Franklin Stacy, Charlestown, Mass.
1860. Henry McEwen Pettit, Carrollton, Mo.
1860. Richard John Owens, Brooklyn, N. Y.
1860. Augustus Theodore Moith, Fishkill-on-the-Hudson.
1860. Gustav Ramsperger, New York City.
1860. Joachim Brickley Moore, Philadephia, Pa.
1860. John Ranson Drake, Milwaukee, Wis.
1860. James Thornton Shinn, Philadelphia, Pa.
1861. Nicholas Gray Bartlett, Chicago, Ill.

EXPENSES OF THE COMMITTEE FROM SEPT. 1, 1905, TO SEPT. 1, 1906.

1905, Oct.	8,	Postage Stamps	$2 00
Nov.	20,	Expenses of F. C. Godbold of La	4 00
Dec.	4,	Expenses of E. F. Kelley of Md	5 00
	4,	Postage Stamps	2 00
1906, Jan.	2,	Expenses of O. W. Bethea of Miss	10 00
	12,	Expenses of W. T. Wenzell, of Cal	2 00
Feb.	13,	Expenses of T. A. Miller of Va	2 00
Mar.	10,	Expenses of Geo. F. Payne of Ga	1 00
	17,	Postage Stamps	2 00
	23,	Printed Matter	2 75
	24,	Chicago Branch Expenses	17 00
	24,	Postage Stamps	2 00
Apr.	7,	Expenses of Geo. F. Payne of Ga	1 00
	7,	Chicago Branch Expenses	8 00
	14,	Printed Matter	1 50
May	12,	Expenses of T. A. Miller of Va	3 00
June	6,	Chicago Branch Expenses	9 00
	28,	Chicago Branch Expenses	25 00

		28,	Postage Stamps	2 00
	Aug.	6,	Printed Matter	1 50
		20,	Chicago Branch Expenses	9 00
		20,	Postage Stamps	50
			Total	$112 25
1906,	Feb.	2,	Received from Treas. Sheppard	$23 00
	May	14,	“ “ “ “	39 25
	Aug.	6,	“ “ “ “	39 00
	Sept.	4,	Due me	11 00
				$112 25

Leaving a balance of $112.75 from the $225.00 appropriated for the committee by the finance committee.

The Chairman of your Committee again desires to thank the various officers and members of the Association for their kind expressions of encouragement during the year. To his associates on the committee he is of course grateful for their hearty co-operation. Our good President has been with us through the year, and sent in quite a number of applications. His enthusiasm and continued words of encouragement were inspiring to the committee, and made our work pleasant. Last, but not least, I desire to take off my hat to the pharmaceutical press, as always the genial and whole-souled editors of the pharmaceutical journals were ever ready to lend their valuable aid towards furthering the interests of the American Pharmaceutical Association. As Rip Van Winkle said, “May they live long and prosper.”

Respectfully submitted, WM. MITTELBACH,
Chairman of the Committee on Membership and Reception.

The report of the Committee on U. S. Pharmacopœia was called for, but Chairman Lyons was not present. Mr. Wilbert said he knew Mr. Lyons had his report ready, and moved that when received it be referred to the Executive Committee of the Scientific Section for consideration, and with a possible elaboration of the report for the next meeting. Mr. LaWall seconded this motion, and so did Mr. Roehrig, after the statement by Mr. Wilbert, in answer to his question, that the report would go to the Scientific Section through the Publication Committee, and not direct. The motion was then put and carried.

The Secretary called for the report of the Committee on Organization of Local Branches, stating that it made a partial report to the Council. Mr. Whelpley said the report to the Council was simply as to some changes in the By-Laws.

Mr. Remington asked if the Council or the Association had ever formulated any rules for the government of local branches, saying he thought something of the kind was needed. From looking over the proceedings of various local branches, he had found that there was a good deal of divergence of view as to the rules that should govern them in their relations to the American Pharmaceutical Association. As there were other local branches about to be formed, he thought some action ought to be taken by the Association, as otherwise some of the acts of the local branches might not be in harmony with the objects of this Association.

Mr. Whelpley called attention to the fact that on page 247 of the *Bulletin* for August there would be found the draft of a constitution and by-laws for local branches, also contained in the report of the committee, and it was expected the Association would adopt or modify this draft. As the Secretary did not have the report of the committee, on motion of Mr. Sheppard, the matter was passed for the time being.

The report of Delegates to the National Wholesale Druggists' Association was called for, and Chairman Charles Holzhauer made the following verbal report:

"The delegates attended and were accorded every privilege, and I was indeed proud to represent the American Pharmaceutical Association in the treatment received there. The entertainment was most lavish, but during the meeting there was nothing of particular importance that would affect this Association."

In the temporary absence of Chairman Lowe, the report of the Committee on Time and Place of Next Meeting was made by Mr. Whelpley, of the committee:

REPORT OF COMMITTEE ON TIME AND PLACE OF NEXT MEETING.

INDIANAPOLIS, *Sept.* 7TH, 1906.

To the American Pharmaceutical Association:

Your Committee on Time and Place of Meeting would report as follows: They had published in the "Bulletin" of the Association a notice addressed to those places that had in contemplation the inviting of the Association to meet with them.

Invitations for the Meeting of 1907 have been received from the following, viz.:

The City of Peoria, Ill.; The City of Saginaw, Mich.; Atlantic City, N. J.; Cedar Point, Ohio; Hotel Rider, Cambridge Springs, Pa.; Hot Springs, Ark.; The Cataract and International Hotels, Niagara Falls, N. Y.; The Jamestown Exposition Co., Norfolk, Va.; also through the members present from New York an invitation to meet in that city.

Of these invitations that from Niagara has been supplemented by an invitation from the Mayor and the presence of a special representative, who has promised reduced hotel rates and special entertainments.

The invitation from the Jamestown Exposition Co. has also been supplemented by invitations from prominent men connected with that Association, and also by invitations from the Norfolk Chamber of Commerce, Board of Trade and Business Men's Association. A special day to be called the "American Pharmaceutical Association Day" will be arranged for, and ample facilities for meetings and fair hotel rates are promised.

A formal printed invitation has been received from the Governor of Tennessee, the Mayor of the City of Nashville and other city officials, the President of the Tennessee Pharmaceutical Association and the Nashville Retail Druggists Association, to hold our 1908 meeting in that city. An invitation has also been received from Mr. Albert Ebert as the representative of Chicago, to hold our 1908 meeting in that city.

An invitation has been received, through Professor Johnson, from the Alaska Yukon Exposition Association, to hold our 1909 meeting at Seattle, Washington. Great attractions are promised in connection with the Exposition and very low railroad rates.

Your committee have gone over these invitations carefully and as far as their personal preferences go, if other things were equal, would recommend the Norfolk invitation. They have, however, tried to look at the matter, not from the standpoint of what is most agreeable, but from that of the highest interests of the Association, and after talking over the matter with quite a number of prominent members of the Association they would recommend the selection of New York City, the time to be the first full week in September, 1907.

It is probable that arrangements could be made by which the Jamestown Exposition could be taken en-route to or from the Association meeting. Quite likely one of the Norfolk steamers sailing from New York could be secured for the round trip at a very reasonable rate.

Clement B. Lowe,
H. M. Whelpley,
E. G. Eberle,
Committee.

Mr. Whelpley explained that there was quite a voluminous correspondence connected with the report, and read a letter just received from Miss Josie A. Wanous, of Minneapolis, making a plea to have the time of meeting set for the second week in September, to enable the pharmacists in her section of the country to attend.

Mr. Hancock, seconded by Mr. Claus, moved to adopt the report as read.

Mr. Sheppard asked Mr. Hancock if he would accept an amendment to leave to the Council the date of meeting, saying Mr. Anderson, of Brooklyn (who was not present at the moment), had some very decided views on this question, and he would like him to have an opportunity to explain them. Mr. Alpers also moved to leave the date to the Council, as the local conditions in New York might be such as to make it impracticable or impossible to meet the first week in September. Besides, he thought the date fixed in the report for the beginning of the meeting, September 2d, was too close to the end of the preceding month to make it convenient for many pharmacists to get to the meeting. He thought it should be left to the Council after consultation with the Local Committee. Mr. Hancock said he would accept this amendment.

Mr. Wilbert suggested that, if left to the Council, that body should take into consideration the second week of June as the time for the meeting—the week following the meeting of the American Medical Association at Atlantic City, which meeting he thought would be a very important one for pharmacists, and this date would give many of them an opportunity of attending the sessions of the American Medical Association.

Mr. Whelpley objected to the suggestion of Mr. Wilbert, as he said many of the State Pharmaceutical Associations had their meetings the second week in June, and this would interfere seriously with the attendance from several sections of the country. He also raised the question as to whether the meeting next year should be held in the city of New York or at one of the nearby resorts, which matter had purposely been left open by the committee for the action of the Association.

Mr. Hancock thought the Council, on consultation with the Local Secretary, could much better decide as to the date of the meeting, and as to whether it should be held in the city proper or in its environs.

Thereupon, the report of the committee was unanimously adopted, with the understanding that it was to be left to the Council to determine the exact date of meeting.

Mr. Sheppard stated that as the Council would not have another session in the meantime, he thought it would be proper now to elect a Local Secretary for the meeting in New York next year, and on behalf of Mr. Thos. F. Main, whose nomination it really was, he desired to present and second the name of Mr. Thomas P. Cook, of New York, for Local Secretary. Mr. Whelpley also seconded this nomination, and moved that nominations be closed, and the Secretary be directed to cast the ballot of the Association, electing Mr. Cook to this position. The motion was adopted, the Secretary announced that he had cast the ballot, and the Chair declared Mr. Cook duly elected Local Secretary for next year's meeting, and said the Secretary would notify him accordingly.

Mr. Remington called attention to the fact that the nomination of Mr. Mittelbach, of Missouri, for First Vice-President created a vacancy in the Council, to fill which he would nominate Mr. I. A. Keith, of Lake Preston, South Dakota. Mr. Beal seconded this motion, and moved that the rules be suspended and that the Secretary be directed to cast the ballot of the Association electing Mr. Keith a member of the Council for the unexpired term of Mr. Mittelbach. The motion prevailed, the Secretary announced that he had cast the ballot, and the Chair declared the gentleman duly elected and said the Secretary would notify him.

There being no further business before the Association for consideration at this time, on motion of Secretary Caspari this recess session of the second general session adjourned.

TWELFTH SESSION—SATURDAY MORNING, SEPTEMBER 8, 1906.

The twelfth (and last) session of the Association was called to order by the President immediately following the adjournment of the recess session

The Secretary read the minutes of the second general session, held Tuesday morning, and also of the adjourned session just closed, which, on motion of Mr. Candidus, of Mobile, seconded by Mr. Claus, were adopted as read.

Mr. Beal called attention to that part of the minutes referring to the creation of a Committee on Reference and Resolutions, and gave it as his opinion that such action embraced the possibilities of much good, or the reverse, and it seemed to him that the details of the plan should have been wrought out a little more carefully and fully. He moved, therefore, that part of the minutes just approved be referred to the Council, for the purpose of elaborating it in detail and putting it into force, and that the committee be not created until the Council shall have acted.

This motion had a second in Mr. Hallberg, of Chicago, the mover of the resolution to create the committee, and was put to a vote and carried.

The Secretary called attention to the presence of several committee chairmen who had not been present during the recess session, and called for report from the Delegates to the N. A. R. D. Mr. Anderson, Chairman, made report as follows :

REPORT OF DELEGATES TO THE NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

INDIANAPOLIS, IND., *September* 3, 1906.

To the American Pharmaceutical Association :

As your representatives, we attended the last meeting of the N. A. R. D. which was held at Boston, Mass., beginning September 18th, 1905, and were accorded the same cordial treatment that has been given our delegates at each annual convention. We were pleased to have with us our distinguished President, Mr. Lemberger, who was introduced by Mr. S. A. D. Sheppard, and extended cordial greetings and assurances of good will in his usual dignified and forceful manner. The response was by Mr. Felix Hirseman, of New York, who paid a glowing tribute to the A. Ph. A. and the splendid service it has rendered pharmacy and the pharmacist.

The attendance at this the seventh annual convention of the N. A. R. D. was the largest in its history; in fact, the largest meeting of retail druggists ever held. This proves that the retail druggists of the country are realizing more and more the value of organized efforts and that intense interest is being taken in the work of the N. A. R. D. The reports of the officers showed a healthy growth, substantial membership and good financial condition; all acknowledged as did the Executive Committee in its report that "the Direct Contract Serial Numbering Plan is the only plan that affords adequate protection to the retailer;" in fact, this great gathering of retailers appeared to be due to the enthusiasm created by the possibilities of the D. C. S. N. plan.

The unanimity with which delegates from all sections of the country praised and cheered this plan, and all proprietors who had adopted it and the lack of support accorded any other means of price protection is conclusive proof that the retail druggists are thoroughly aroused, can distinguish between subterfuge and true co-operation, and while supporting the principles of "live and let live" intend to stand for that which gives prompt and positive protection to their best interests.

A remarkable feature of the convention was the large attendance at each session; each delegate appeared to be in his seat at all times, and was held there by his deep interest in all matters that came before the body, his loyalty to those who had sent him to represent them, and the expectation that his next important act would be to aid in giving a hearty welcome to another fearless and true friend of the retail drug trade who had adopted the D. C. S. N. plan. The splendid manner in which the delegates were received and entertained by our Boston friends, the hearty good will that was everywhere apparent, and the great fraternal spirit that dispelled all differences and cemented the ties of fellowship made this convention a memorable one to all who were present, and afforded an exceptional opportunity for manufacturers to come forward and prove their sincerity in the expressed desire for effective co-operation with the retail drug trade; but the one unfortunate and disappointing feature of this otherwise most successful convention was found in the fact that while those manufacturers who have done their whole duty by the adoption and enforcement of the D. C. S. N. plan made themselves more popular than ever by their presence and encouragement, many other manufacturers, particularly those belonging to the St. Louis Club, were conspicuous by their absence.

The deliberations of the convention resulted in the adoption of the following resolutions:

COMMERCIAL CONDITIONS—DIRECT CONTRACT PLAN.

WHEREAS, The direct contract and serial numbering plan has proven a powerful factor in improving the deplorable conditions from which the druggists have suffered for many years, therefore, be it,

Resolved, That we express our heartfelt appreciation of the efforts of those manufacturers who have already adopted that plan.

Resolved, That we most earnestly direct the attention of other manufacturers to the results which have been gained, and while we appreciate that improved conditions have resulted in some localities from the limited contract plan we reiterate our firm belief that the direct is the most satisfactory plan yet devised, and we are more than ever convinced that its adoption by all manufacturers would be for the best interest of all concerned.

TWO, FOUR AND EIGHT.

Resolved, That we are emphatically opposed to a jobbing price to the retailer in excess of $2.00, $4.00 and $8.00 for proprietary medicines, food-products, and all other articles handled by the retail druggist.

SALES TO PHYSICIANS, CONSUMERS, GROCERS, AND MAIL-ORDER HOUSES.

Resolved, That we hereby enter our most earnest protest against sales by manufacturers and jobbers of proprietary medicines, pharmaceuticals, chemicals, surgical dressings, etc., to physicians direct, to consumers, grocers and mail-order houses.

Resolved, Further, That the Executive Committee is hereby instructed to take such steps as may be practicable to remedy existing conditions.

DISPENSING PHYSICIANS.

Resolved, That fraternal relations of the most cordial character should be encouraged between physicians and pharmacists to the end that each shall be guaranteed all the benefits that by right ought to accrue from the faithful discharge of the duties of their respective spheres on behalf of the sick and suffering.

Resolved, That the practice of counter prescribing by some druggists by means of which the functions of medical practitioners are usurped by those who are not qualified to so act is hereby condemned in the strongest terms.

Resolved, That the equally pernicious and dangerous practice indulged in by some medical practitioners in usurping the rights and prerogatives of pharmacists and entering upon the practice of an art for which they have no especial training or educational qualifications be likewise emphatically condemned.

ADVERTISING.

Resolved, That we approve of the efforts of manufacturers to prevent the advertising of their remedies at ruinous prices, and we urge them also to insert a clause in their advertisements warning the public against the purchase of mutilated packages.

NATIONAL SALESMAN'S CARD.

Resolved, That the Executive Committee is authorized to adopt, if practicable, a national salesman's card.

TRADING STAMPS.

Resolved, That we again affirm it as our firm belief that the use of trading stamps is detrimental to the interest of the drug trade and approve the efforts being made to secure the passage of anti-trading-stamp laws in the various States.

TELEPHONES.

Resolved, That the Association recommends that, wherever possible, steps be at once taken by local associations to install slot-machine telephones in all retail pharmacies; and

Resolved, Further, That the president appoint a committee to receive inquiries and furnish information to members of the Association concerning methods of making public telephones in drug stores a benefit instead of a burden to our members.

FREE SAMPLE PACKAGES.

Resolved, That we condemn the practice of some proprietors in giving away free packages of their remedies and relying upon the retail druggists for their distribution, unless such proprietors are willing to allow the retail druggists the full price for each and every package so distributed.

PHARMACY—STATE BOARDS OF PHARMACY.

Resolved, That it is the sense of this convention that state boards of pharmacy should strive in all cases to exercise their full powers and prerogatives in their work of protecting and safeguarding the public health, preserving the integrity of pharmacy and upholding the rights of every honest pharmacist, and to that end they should brook no unwarranted or unfair interference on the part of the executive or appointing authority, either in the matter of choosing employees of the boards or of giving administrative effect to duties prescribed for them by the various pharmacy laws, by virtue of which they received their appointments.

A. M. A. CO-OPERATION.

Resolved, That the work of eliminating from the practice of pharmacy and medicine, as far as practicable, unethical, secret, and in some cases fraudulent and dangerous compounds, undertaken by the Council on Pharmacy and Chemistry of the American Medical Association, be encouraged by our Executive Committee; and be it further

Resolved, That a Council of Pharmacy and Chemistry of the N. A. R. D. be created, to consist of seven members appointed by the president, said Council being hereby authorized and instructed to act for Association and in harmony (so far as consistent with the objects and ideals of this Association) with the A. M. A. Council, subject only to such limitations as may be imposed by specific instructions from the Executive Committee.

MEDICAL DETAIL DEPARTMENT.

Resolved, That the Executive Committee is hereby authorized and directed, provided the funds in their hands will permit, to create and maintain a department of medical detail whose province it shall be to provide literature on U. S. P. and N. F. preparations and maintain a corps of detail agents whose duties it shall be to distribute said literature in person to physicians and by personal solicitation direct the medical profession into the path of ethical pharmacy, and that the Executive Committee call to the attention of the various state and local associations the matter here referred to for action by them.

NATIONAL AND STATE LEGISLATION.

Resolved, That this Association endorse the passage of a Food and Drug Bill that limits the definition of a drug to those contained in the United States Pharmacopœia and National Formulary; also, that the standard of purity and quality fixed by the Pharmacopœia and National Formulary shall be the only standard, and no deviation should be permitted.

2. That we are strongly opposed to the enactment by Congress of any parcels post law.

3. That this Association will give its active support to any bill that contemplates the raising of the rank of naval pharmacists and the suitable increasing of their pay,

4. That the Association is opposed to any bill having for its object the entire removal of the tax from ethyl alcohol, but it heartily favors the reduction of this tax to 70 cents per proof gallon.

5. That the work on the Mann Bill must be pushed with all the force we can command, and to that end we expect the support of all associations interested in the welfare of the drug trade.

6. That the National Association of Retail Druggists is unalterably opposed to the stamp tax upon proprietary medicines, as it would impose an unjust burden upon the retail druggists throughout the country who are already paying more than their share of the government revenues on alcohol, etc., and a re-imposition of this tax on proprietary medicines would be a great hardship upon the retail druggist on account of the large number of proprietary articles which are made and sold by them.

That the Secretary of this Association shall be, and hereby is, instructed to mail a copy of this resolution to the chairman of the Ways and Means Committee of the National House of Representatives, to each member of the United States Senate and House of Representatives, to the President and each member of the President's cabinet.

7. That the National Association of Boards of Pharmacy be requested to secure a greater uniformity in the various state pharmacy laws, a general interchange of certificates, and the enactment of anti-narcotic laws in those states which do not now have such laws.

8. That our Committee on Legislation is hereby instructed to secure national legislation for the control of the sale of narcotics as between the states.

9. That the Executive Committee is hereby instructed to request the various state pharmaceutical associations to secure adequate legislation in order to prevent the selling of medicines by irresponsible itinerant vendors.

RESOLUTIONS OF THANKS—ENTERTAINMENT.

Resolved, That the thanks of the delegates to this convention are hereby most heartily extended to the Boston Retail Druggists' Association, the Ladies' Auxiliary of the Boston Association, and the Massachusetts Pharmaceutical Association for their most generous and successful entertainment of the delegates and guests of this convention.

CONGRESSMAN JAMES R. MANN.

Resolved, That the cordial thanks of this Association are hereby again extended to Congressman James R. Mann for his labors on behalf of the patent revision measure popularly known as the Mann Bill.

Resolved, That we recommend to the favorable consideration of our fellow druggists in Mr. Mann's district the desirability of returning him to his seat in Congress.

SENATOR SHELBY M. CULLOM.

Resolved, That the thanks of this Association be tendered to Hon. Shelby M. Cullom, United States Senator from Illinois, for his noble stand on the Mann Bill, and his opposition to the re-imposition of the stamp tax.

OFFICERS, COMMITTEES AND DEPARTMENT HEADS.

Resolved, That a vote of thanks be given the officers, committees and those in charge of the various departments of our work for their painstaking, efficient and enthusiastic labors in behalf of this Association.

MISCELLANEOUS—OPENING EXERCISES OF THE CONVENTION.

Resolved, That this Association recommends to the Executive Committee the importance of abbreviating the opening exercises of the convention.

FRATERNAL RELATIONS.

Resolved, That we note with great pleasure the many evidences of friendly co-operation existing between the associations representing the various branches of the drug trade, and we wish here to express the hope that this warm spirit of co-operation may grow during the coming year.

ASSOCIATION BUTTON.

Resolved, That the Executive Committee is hereby instructed to consider the advisability of adopting a small button emblazoned with some appropriate insignia, to be worn by the members of the N. A. R. D., and to be furnished by the Secretary's office at a price sufficient to provide a small revenue for the Association.

FRIENDLY ATTITUDE OF THE PRESS.

Resolved, That we note with gratification the friendly attitude and favorable comment of the pharmaceutical press.

Resolved, That we extend our heartfelt thanks to those newspapers which have refused to insert bait advertisements of remedies at ruinous prices.

Professional and commercial pharmacy are so dependent one upon the other, that we feel this association should take a deep interest in all the work of the A. Ph. A., and the closest fraternal relations between the two organizations should be cultivated at all times, to the end that each may be strengthened and the objective point of each, the betterment of pharmacy, more readily attained.

Respectfully submitted, William C. Anderson, *Chairman.*
S. A. D. Sheppard,
E. H. LaPierre,

Mr. Beal moved that the report be received and referred to the Publication Committee, with the thanks of the Association to the delegates for the efficient manner in which they had discharged their duties. Mr. Roehrig seconded the motion and it prevailed.

The report of the Committee on Organization of Local Branches was called for. Mr. Hynson, Chairman, did not have the report with him at the moment, but stated the substance of it. The text of the report here follows:

REPORT OF THE COMMITTEE ON THE ORGANIZATION OF LOCAL BRANCHES.

Mr. President and Gentlemen:

It is scarcely necessary for this Committee to report in detail, the progress made in the organization of local branches of this Association, as the same has been fully described in the Bulletin and other journals. Nor will the Committee, as such, claim any particular credit for the most excellent work that has been done, although, your servants have kept in close touch with these doings and have lent all possible help to those to whom so much credit is due.

We are happy to formally report the establishment of branches at the following points; Chicago, Philadelphia, Baltimore, Washington, Minneapolis and Cleveland. All of which are ably officered and have already begun to hold meetings and emphasize the advantages of membership in this organization. Eighty-nine new members added to the roll this year is the direct work of the Chicago Branch.

Active efforts are making in New York and St. Louis and we are encouraged to think that the Manhattan Pharmaceutical Association of the former and the Cinchona Club of the latter will soon become the representative branches of the A. Ph. A. in those two cities. Boston, it is expected, will also soon form a branch.

In view of the fact that there are generally a number of pharmaceutical bodies in the larger cities, it appears to us desirable that some one of these or a combination of two or more of these, should become the local branch of this Association, wherever this arrangement is possible.

Effort has been made by us to organize our members in such of the states as have no pharmaceutical associations, into branches of this Association which might, at the same time, take the place of the usual State Association. Although we have had no results from work done in this direction, it may be helpful to our successors to know that the subject has been broached to every member and to the secretaries of the Boards of Pharmacy in Arizona, Idaho, New Mexico, and West Virginia. California which we believed to be our most promising field in this regard, suffered its terrible loss just when we were about to try to enlist the interest of our members thereabouts.

While possibly not within the scope of this Committee's work, we have held correspondence with Mr. James H. Hargreaves of the Province of Ontario, hoping thereby to encourage the organization of a Canadian branch, the results are best gleaned from the letter we attach from Mr. Hargreaves.

Thinking you may desire to adopt some form of organization that may be, at least, suggested for future branches, we have ventured to submit herewith a draft for your consideration. We have also deemed it proper to offer such amendments to our By-laws as seem to us necessary to give encouragement, authority, recognition and representation to these auxilliary bodies.

Draft of Constitution and By-Laws for Local Branches.

PREAMBLE.

Whereas, The American Pharmaceutical Association has for more than fifty years actively and earnestly labored, primarily, for the betterment of humanity; especially for the intelligent alleviation of its physical ills, and,

Whereas, This Association, for as long a period, has fearlessly and consistently fought and striven against *fraud*, *ignorance empiricism* and *quackery*, in the selection, preparation, exploitation and sale of remedial agents, and,

Whereas, We believe the acknowledged great effectiveness and usefulness of that Association can be increased and further extended and the present recognized benefits of membership in it, greatly enhanced by the formation of local branches, therefore, be it

Resolved, That we do, hereby, agree to constitute ourselves such a branch of this venerable and most honorable Association, and pledge ourselves individually and collectively, to maintain its laws and principles, and to do our most to assist it to still further elevate and advance Pharmaceutical Practice, and to such an end we adopt and accept the following Constitution and By-laws.

CONSTITUTION.

Article I. Name—this organization shall be known as the "——— Branch of the American Pharmaceutical Association;" abbreviated, "—— Br. of A. Ph. A."

Article II. Purposes—To further the objects and aims of the parent body; to work with it, for the general advancement of pharmacy and pharmacists, to win for individual members all the advantages that may be secured by closer affiliation with it and its members, and to encourage natural, proper and helpful relations between medicine and pharmacy are some of the purposes for which this branch is formed.

Article III. Members—The membership of this branch shall consist of:

Section 1. Honorary—Physicians and other Scientists interested in the practice of

Pharmacy; and pharmacists of distinction, not residents of this state, may be elected to honorary membership.

SECTION 2. Active—Members of the American Pharmaceutical Association residing in the state of ———, who signify their willingness to adhere to the Constitution of the parent body and subscribe to the principles announced in the preamble and to the Constitution and By-laws adopted by this branch may be elected active members.

SECTION 3. Associate—All members of the American Pharmaceutical Association residing in the state of ———, who are not active members, shall be considered associate members, and shall be entitled to all the privileges of active members, excepting the right to vote and to hold office.

ARTICLE IV. Amendments—This Constitution may be altered or amended by the affirmative vote of a majority of the active members of this branch, provided propositions to alter or amend have been submitted in writing at the immediately preceding meeting.

BY-LAWS.

ARTICLE I. Officers—The officers of this branch shall be a President, a Vice-President, who shall also be chairman of the Executive Committee, four chairmen of the other standing committees, and a Secretary-Treasurer, all of whom shall be elected and installed at the regular January meeting.

ARTICLE II. Committees—The standing committees of this branch shall be:

SECTION 1. On Membership—To consist of the chairman, who shall appoint four associates from the active membership.

SECTION 2. On Professional Relations—To consist of the chairman, who shall appoint four associates from the active and honorary membership.

SECTION 3. On Science and Practice of Pharmacy—To consist of the chairman, who shall appoint two associates from the active membership.

SECTION 4. On Education and Legislation—To consist of the chairman, who shall appoint four associates, two from the active and two from the honorary membership.

SECTION 5. Executive—To consist of the Vice-President as chairman, the several chairmen of the other standing committees, and ex-officio, the Secretary-Treasurer.

ARTICLE III. Meetings—This branch shall meet monthly, from October until May, inclusive. Special meetings may be called by Executive Committee.

ARTICLE IV. Quorum—Five active members shall constitute a quorum.

ARTICLE V. Dues—Every member shall pay annually to the Secretary-Treasurer one dollar as dues.

ARTICLE VI. Order of business:

1. Reading of Minutes.
2. Reports of Officers.
3. Reports of Committees.
4. Unfinished Business.
5. New Business.
6. Election and installation of Officers.
7. Papers and Discussions.
8. Adjournment.

ARTICLE VII. Amendments—These by-laws may be amended at any meeting by an affirmative vote of a majority of the active members present, provided notice of the proposed change shall be given at a previous meeting.

The form of organization has, with slight modifications, been adopted by at least three of the branches, and while it is compact we believe it will be found comprehensive and elastic enough to meet all requirements. The representation we seek to secure for these branches in the Council of the Association will, it is thought, be encouraging to the branches and helpful to the Council.

We also suggest that a series of tracts or pamphlets be prepared and furnished local branches in liberal quantities; the same might be useful to the Committee on Membership. The employment of an organizer, upon some economical plan, is another matter that should at least be discussed.

Respectfully submitted,
HENRY P. HYNSON,
C. S. N. HALLBERG.

Mr. Hynson then moved the adoption of the form for a Constitution and By-Laws for local branches as set out in the committee's report, and as published on page 247 of the August issue of the *Bulletin*, as a suggested form for such organizations.

Mr. Remington suggested that Mr. Hynson add to his motion that a copy of this draft be sent to the secretaries of the various local branches already established, and Mr. Hynson said he would accept the amendment.

The motion was then adopted as amended.

First Vice-President Holzhauer was called to the Chair while the Committee on President's Address made its report. The Secretary read the report, stating that it was signed by Mr. J. W. England only, but that he was told the other two members had read it and were in accord with it, but they were not present and could not sign it.

REPORT OF THE COMMITTEE ON PRESIDENT'S ADDRESS.

Gentlemen : Your Committee on President's Address would report as follows:

We indorse the recommendation that the *Bulletin* of the American Pharmaceutical Association be continued, and urge that the expense of publication be reduced to the lowest cost consistent with the proper conduct of the work.

We agree with the thought expressed that "The sin of estrangement between the physician and the pharmacist to-day can be overcome by the cultivation of a kindred fellowship that will recognize a proper relation between the prescriber and the dispenser;" and we believe that this can best be done, probably, by encouraging the formation of local branches of the A. Ph. A. generally, to the meetings of which physicians should be invited, and at which subjects should be discussed that would be of direct practical value to the physician in his daily work. The physician cares little, or nothing, about technical pharmacy, as such; but he cares much about the physical and chemical properties of new remedies, and the best methods, pharmaceutically, of administering drugs.

Regarding the question of increased membership: We believe that a material increase in our membership may be had by encouraging the formation of as many local branches as possible, and thus make these branches "feeders" to the parent body. Branches are now in existence at Philadelphia, Chicago, St. Paul, Washington, D. C., and Baltimore, and special steps should be taken to increase the number.

The present sources of revenue of our Association, are wholly insufficient to do the kind and volume of work we should do. Unquestionably, in our judgment, there should be a permanent endowment fund, established for the prosecution of special work or research in education, legislation, and scientific and technical pharmaceutical matters generally. The conditions of our work to-day are radically different than they were twenty or more years ago. There is much less of the individual initiative, and much more of a general dependence upon organized effort. This change has come as a logical necessity, not only because of a change in existing conditions, but also, because the interests have become too great in volume for the individual to handle; hence, we urge most strongly that the subject of a permanent endowment fund be given your most careful consideration. The following thought has occurred to us: Would it not be practicable to raise a fund of $25,000 or more by issuing term bonds of $100 or more, *these to be non-bearing interest bonds?* The money from such bonds could be invested, and with the interest obtained from such investments, $1,000 or more could be paid off each year, until the debt become extinguished, and the fund established. Interest could doubtless be obtained at the rate of four per cent., and, in due time, an endowment fund could be had without cost to the Association, and with a loss of interest only to the holder of the bonds, as all his holdings would be paid back. These bonds could be placed among the members of our Association and the manufacturing pharmaceutical and chemical interests of the country. With reference to the latter, the purchase of these bonds would not be a request for a cash donation outright to the Association, but simply for a loan *without interest*, or rather the accumulated interest of such a loan. It seems reasonable to believe that the manufacturing interests of the country, in view of what the American Pharmaceutical Association has done for them, by the published research-work of its members, would be entirely willing to support such a movement as a *quid pro quo*.

We do not believe in the abolition of the Section on Commercial Interests, or the establishment of a Section on Pharmaceutical Faculties and Boards of Pharmacy, but it might be of value to combine this section with the Section on Practical Pharmacy and Dispensing, and give the latter section more time for sessions.

The necessity of regulating the sale and use of poisons, or rather the protection of the public against the improper sale and use of poisons, furnishes one of the strongest reasons for the existence of the different State pharmacy laws, and we think that every endeavor should be made to make the poison sections of the State laws uniform and effective. We do not believe that this can be done by a national pharmacy law, because such a measure would be effective only between States, or with commerce passing from one State to another; and the sale of poisons to the public is almost wholly a local matter, and not an interstate one. We do think, however, and suggest, that the subject of codifying and uniformizing the different State poison laws be called to the attention of the National Boards of Pharmacy, and that they be asked, by this Association, to consider the subject, and to take steps to secure the enactment of uniform poison legislation or amendments in the different States along the lines, probably, laid down in the model anti-narcotic law.

We believe that a National Department of Health would be of material service in conserving the public health, and that we should heartily join with the American Medical Association in pushing such a movement.

We strongly urge that the campaign now being waged by the American Pharmaceutical Association for the proper recognition of qualified pharmacist of the U. S. Army, Navy and Marine Hospital Service, regarding rank and services be continued with increased energy; and we suggest that, if possible, we secure the co-operation of the American Medical Association, as the wishes of the medical men are potential in the service.

Respectfully submitted, for the Committee, J. W. ENGLAND.

Mr. Mayo, seconded by Mr. Rapelye, of Connecticut, moved to receive and adopt.

Mr. Hynson asked if there were not definite recommendations in the report, and if the adoption of the report did not carry the recommendations with it. The Secretary answered in the affirmative, and said there were some recommendations. Mr. Hynson then suggested that if there were no recommendations requiring immediate action it might be well to refer the report to the Council, as he thought the President's recommendations ought to receive more serious consideration than it was possible at this time to give them in general session. He added that he hoped the

President would understand that this was rather in the nature of a compliment to him than otherwise.

Mr. Mayo accepted Mr. Hynson's suggestion and made it a part of his motion to receive, and it was so put and carried.

Mr. Hynson said he would like to offer to the Association a full and complete history of the Philadelphia Branch Association, compiled by its Secretary, Mr. M. I. Wilbert, and moved to refer to the Section on Historical Pharmacy, with the thanks of the Association for this valuable compilation of facts—including the autograph of the President of the Local Branch and also that of the Secretary.

The motion was seconded by Mr. Flemer, of Washington, D. C., and carried.

President Lemberger resumed the chair.

Mr. F. B. Hays read his report as Reporter to the Public Press, as follows:

REPORT OF THE REPORTER TO THE PUBLIC PRESS.

To the Members of the American Pharmaceuticat Association:

Gentlemen: Your Reporter to the Public Press has purposely delayed making his report until now in order that he might have something definite to say.

Upon his arrival at Indianapolis he called at the offices of the three local daily papers, made himself and his official position known, and offered his assistance to the city editors' staffs. This offer was accepted in an appreciative spirit, and the Reporter has been in daily touch with at least two of the newspapers since, either through their reporters at the meetings or through their city editors' offices. Two of the local papers have devoted a liberal amount of space to our meetings, and one other has printed a few of the notes furnished to it.

Your Reporter has made repeated but futile efforts to meet the representative of the Associated Press. He has communicated with him, however, but has not succeeded in arousing his interest in our proceedings to any marked extent.

Your Reporter addressed letters to all the officers and chairmen of important committees of this Association some months ago with a view to collecting interesting data concerning their work to be sent broadcast among the druggists of the country through the pharmaceutical press, as he believed that this kind of advertising would create new interest and keep alive old interest in our Association. The responses, or lack of them, did not encourage him to continue his efforts along this line. Perhaps the officers and committee-chairmen deemed this well-intended effort to be outside the province of a Reporter to the Public Press.

One "interview" with the Reporter on the aims and accomplishments of the Association appeared in the Sunday edition of the New York *Tribune* a short time ago.

Respectfully submitted, FRANCIS B. HAYS,
Reporter to the Public Press.

Indianapolis, Ind., September 8th, 1906.

Supplementing his report, Mr. Hays said he believed the Association was under special obligations to the *Indianapolis News* for the very liberal amount of space it had devoted to the meeting, and for sending Mr. Charles Dennis, an old druggist, and friend of the late Ex-President Sloan, to report the sessions, which task he had accomplished with a knowledge and understanding that only one with experience in the drug business could have done.

The Chair stated that he was sure the members recognized the value of these reports, and that they were all touched by the allusion to the valued friend who had acted as reporter for the *News* during the meeting. He said he had observed himself that the press of Indianapolis had treated the Association with great kindness.

Mr. Whelpley moved to receive the report and refer for publication, and Mr. Hynson, seconding the motion, said he would like to suggest to the next reporter, that he continue the efforts made to get the Associated Press to send out adequate notices of the meetings. The druggists over the country looked for reports from the annual meetings of the American Pharmaceutical Association in their local papers, and it would help greatly to get the press dispatches.

The Chair stated that Local Secretary Carter, early in the meeting, had the promise of the Associated Press to send broadcast over the country anywhere from one to four or five hundred words a day of matter that he might prepare.

Mr. Hays said he got a letter of introduction last year from the daily papers in New York to Mr. Melville Stone, the head of the Associated Press, and called on him and told him what he represented. He was received kindly and left with him a copy of the Proceedings. The only explanation he had to make of the attitude of these people was, that they seemed to lack appreciation of what the Association stood for and what it was doing. Its work was not sensational enough for them, apparently.

Mr. Hallberg though the Association was amply strong to demand a hearing of Mr. Lawson, of Chicago, President of the Associated Press, and through him get action on the part of Mr. Stone.

The motion to receive the report and refer for publication was then adopted.

The Secretary announced that he had received two telegrams in reply to messages of greeting sent out by the Association, one from Dr. Enno Sander, of St. Louis, and the other from Wm. J. M. Gordon, of Cincinnati, which he moved to publish in the Proceedings. The motion was adopted without dissent:

CINCINNATI, O., *Sept.* 7, 1906.

MR. ALBERT EBERT, *Care Claypool Hotel, Indianapolis:*

Kindly expression and remembrance of yourself and others just received which is greatly appreciated; we sincerely regret not to be with you. Please express our cordial regards to all who so kindly remembered us and hopes of meeting you all again.

MR. & MRS. W. J. M. GORDON.

ST. LOUIS, MO., *Sept.* 7, 1906.

DR. CHAS. CASPARI, JR. & FRIENDS, *Care Claypool Hotel, Indianapolis, Ind:*

Sincere thanks for your kind message which will aid me certainly in recuperation and rejuvenation.

ENNO SANDER.

Mr. Whelpley read the minutes of the fifth session of the Council, held at Indianapolis September 5, 1906.

Fifth Session of the Council—September 5, 1906.

Council was called to order at 9:30 a. m. by Chairman Beal.

The absentees were Messrs. Carter, Holzhauer, Hopp, Hynson and Meissner.

Applicants for membership, Nos. 277 to 288 inclusive, were duly elected.

Moved by Sheppard and seconded by Eliel that the By-Laws be suspended and Wm. P. Overstreet be reinstated.

S. A. D. Sheppard presented the following:

The undersigned, recognizing the beneficent influences of the American Pharmaceutical Association upon American pharmacy, and upon the civilization which that pharmacy serves, and being desirous of seeing the permanency of the Association assured by the possession of means which will enable it to tide over any periods of adversity which in the vicissitudes of human affairs may come to any institution, do hereby make to the members of this Council the following proposition:

1. That there shall be established a permanent fund to be known as the "Endowment Fund."

2. That the undersigned, S. A. D. Sheppard and J. H. Beal, jointly agree to pay into said fund one dollar for each twenty dollars contributed and paid into said fund by all other members of this Association up to and until such Endowment Fund shall, with its accumulations of interest, reach the sum of twenty-five thousand dollars ($25,000).

3. That as moneys shall be received as additions to said fund the same shall be invested in such securities as the Council may direct until the interest and other accumulations, together with the amount of the principal, shall reach the sum of twenty-five thousand dollars ($25,000).

4. That when the Endowment Fund shall have reached the sum of twenty-five thousand dollars ($25,000) one half the income derived therefrom may be used for any purpose deemed wise by the Association.

5. That when said Endowment Fund, inclusive of donations, interest and other accumulations, shall amount to the sum of fifty thousand dollars ($50,000.00), the Association may use ninety per cent. (90 per cent.) of the income therefrom for any purpose deemed wise and profitable by the Association.

6. That under no circumstances whatever shall all the income from said fund be used, but at least ten per cent. (10 per cent.) thereof shall be annually added to the principal of the Endowment Fund.

7. That under no circumstances whatever shall the principal or any part thereof be used for any purpose except investment for income, nor pledged for any debt of obligation of the Association, or any person; nor used for any other purpose or in any other manner than as specified herein.

8. If any of the above provisions are violated, the amount of said Endowment Fund shall be returned to and distributed to all the donors thereof, or to their heirs, in the proportions contributed by said donor, with simple interest at four per cent. (4 per cent.).

9. In case of the death of either of the subscribers hereto before the Endowment Fund shall reach the sum of twenty-five thousand dollars ($25,000.00), their estates shall not be held for the payment of sums thereafter accruing under these propositions. Or in case either of said parties should meet with severe financial reverses before the fund shall reach said sum of twenty-five thousand dollars ($25,000.00), they shall likewise be released from subsequent payments hereunder.

10. That the names of all donors, with the sums contributed by them, shall be printed in the columns of the *Bulletin* of the Association, and in the Annual Proceedings.

S. A. D. Sheppard,
J. H. Beal.

Indianapolis, September 5th, 1906.

The proposition was discussed by Lemburger, Hancock and Caspari.

Thos. V. Wooten, Secretary of the N. A. R. D., explained the work being done by that Association in the interest of the National Formulary:

Moved by Kremers and seconded by Caspari, that the Council would welcome any proposition from the N. A. R. D. relative to the publication of the National Formulary, and that this Association will gladly co-operate with the N. A. R. D. in their endeavor to popularize the preparations of the National Formulary among physicians.

It was moved by Kremers, seconded by Alpers, that the Treasurer be appointed a committee to figure at what sum life membership should be placed if it be awarded on an annual sliding scale. Carried.

It was moved and seconded that the proposition for an Endowment Fund as proposed by J. H. Beal and S. A. D. Sheppard be accepted, subject to such modifications as may be made by the Association. Carried.

Moved by Chas. Caspari, Jr., seconded by J. L. Lemberger, that the name Wm. Procter Jr. Fund be changed back to its original name, Life-Membership Fund. Carried.

The Council then adjourned.

Mr. Remington said he was not sure that every member present grasped the meaning of the founding of an endowment fund, and he wanted to call attention to the fact that this was the first practical step taken in this direction, and that through the generosity of Messrs. Beal and Sheppard the creation of an endowment fund seemed now quite possible. He was sure that their action must have the cordial approval of every member of the Association, and he hoped that others would come in and assist in the good work.

Mr. Claus, seconded by Mr. Apple, moved the adoption of the minutes of the Council with this amendment, and the motion carried.

The Chair stated that this generous action on the part of these gentlemen had touched his heart. The movement had come sooner than he had expected it.

Mr. Whelpley read the minutes of the sixth session of the Council, held September 6th.

SIXTH SESSION OF THE COUNCIL—SEPTEMBER 6, 1906.

Vice Chairman Alpers called the Council to order at 9:30 a. m. with the following present: Alpers, Holzhauer, Diehl, Roehrig, Eberle, Mittelbach, Sheppard, Hancock, Eliel, Caspari, Jr., Whelpley, and Payne.

The minutes of the fifth session were read and approved.

The special committee on life membership reported as follows:

Amend the By-Laws by striking out the present Article IV of Chapter VII and inserting in place thereof the following:

Any member of the Association, who shall pay to the Treasurer the sum of $100.00 during the first year of his connection therewith, and also any member not in arrears, who after ten years shall pay the sum of $75.00, or after fifteen years the sum of $50.00, or after twenty years the sum of $25.00, and any member who may have paid annual dues for thirty-seven consecutive years, shall become a life member, and shall be exempt from all future annual contributions.

Chairman Mittelbach made a verbal report for the Committee on Membership, and referred to the full report of the General Committee on Membership and Reception to be read before the Association at the second general session.

Applicants for membership, Nos. 289 to 300 inclusive, were duly elected.

On motion, the Council adjourned to 9 a. m. September 7.

On motion of Mr. Mayo, the minutes were adopted as read.

Mr. Whelpley read the minutes of the seventh session of the Council, held September 7th.

Seventh Session of the Council—September 7, 1906.

Council called to order at 9:30 a. m. by Chairman Beal, with all members present excepting Messrs. Alpers, Carter, Hopp, Meissner and Payne.

Minutes of the last meeting were read and approved.

J. H. Beal offered the following:

That a committee be appointed to consider the proposition of a permanent schedule for the sessions of the Association and its Sections, so as to economize time and facilitate the real business of the Association and prevent the wasting of time in the needless entertainments and profitless discussions.

J. L. Lemberger moved the adoption of the suggestion. Adopted.

The Chair named the following committee: Messrs. Holzhauer, Mittelbach, Whelpley, and Eberle (chairman).

Moved by Caspari, Jr., and seconded by Lemberger, that a sum not to exceed $40.00, be appropriated for illustrations to be prepared in Germany, and used in connection with one of the papers to be published in the Proceedings. Carried.

S. A. D. Sheppard moved, and Leo Eliel seconded, that $75.00 be appropriated for clerical work for the Secretary of the Council. Carried.

A letter from Chas. L. Wright, relative to the date of meeting was referred to the Committee on Time and Place of Meeting.

Moved by Oldberg and seconded by Whelpley that a standing committee of five, not necessarily members of the Council, of which the editor shall be one, be elected by the Council as a Committee on A. Ph. A. Bulletin. Carried.

Moved and seconded that when the Council adjourns, we adjourn to meet at 7 p. m. to-day, and that the above election be a special order of business.

Applicants Nos. 301 to 305 were duly elected.

On motion, the Council adjourned.

On motion of Mr. Roehrig the minutes were adopted as read.

The minutes of the eighth session, also held September 7th, were read by Mr. Whelpley, and likewise the minutes of the new Council, held the same date.

Eighth Session of the Council—September 7, 1906.

Council met at 7:30 p. m., with the following members present: Messrs. Diehl, Caspari, Jr., Roehrig, Lemberger, Sheppard, Hallberg, Whelpley, Beal, Eberle, Godbold, Hancock, Kremers, Meissner, Mittelbach, Payne.

Upon request, C. Lewis Diehl took the chair and the minutes of the seventh session were read and approved.

On motion by S. A. D. Sheppard the Committee on Certificate for Prize Students was continued.

On motion by S. A. D. Sheppard it was decided to furnish the prize certificate without charge.

The following were elected to constitute the Committee on A. Ph. A. Bulletin: H. P.

Hynson, L. C. Hopp, H. M. Whelpley, F. J. Wulling. C. S. N. Hallberg is chairman by order of the motion.

On motion by H. M. Whelpley the Committee on Publication was instructed to publish a picture of George White Sloan as a frontispiece to the 1906 volume of Proceedings

On motion by Chas. Caspari, Jr., the sum of $25.00 was appropriated in addition to the sum already set apart for the Section on Practical Pharmacy and Dispensing.

On motion by E. G. Eberle, Henry M. Whelpley and Otto F. Claus were authorized to establish a local branch in St. Louis.

On motion by S. A. D. Sheppard, E. H. La Pierre and J. W. Baird were authorized to establish a local branch in Boston.

On motion of S. A. D. Sheppard, applicants Nos. 306 to 310 inclusive, were duly elected.

On motion by A. M. Roehrig, seconded by S. A. D. Sheppard an additional sum of $15.00 was appropriated for the Section of Education and Legislation.

On motion Chas. Caspari, Jr., $10.00 was appropriated for the new officers of the Section on Education and Legislation.

On motion the old Council adjourned and the new Council proceeded to organize.

First Session of New Council.

J. H. Beal was elected Chairman, A. M. Roehrig Vice-Chairman and H. M. Whelpley Secretary.

On motion by Jos. P. Remington the by-laws were suspended and the Chairman of the Council was requested to name the Council committees and report them to the Council.

On motion the Council adjourned subject to the call of the Chairman.

Mr. Anderson, seconded by Mr. Wilbert, moved to adopt as read, and the motion prevailed.

Mr. Sheppard called attention to the fact that he had presented at Tuesday morning's session some proposed amendments to the By-Laws, and that the Council had proposed a substitute for that in regard to life-membership, and he now moved to adopt the substitute. He explained the present By-Law on the subject, and showed that this was an extension of the opportunity afforded for life-membership under the By-Laws, and that a member who had paid for twenty years could now become a life-member for $25.

Mr. Alpers seconded this motion.

Mr. Whelpley read the proposed by-law again. (See p. 101.)

Mr. Holzhauer expressed his dissatisfaction with the present scale of prices attaching to life-membership, saying they were not liberal enough, in his judgment, to invite men to take life-membership.

The motion of Mr. Sheppard to adopt the Council's substitute was then put to a vote and carried.

Mr. Sheppard then moved that the time for dropping delinquent members be made three years instead of two, as at present.

Mr. Hallberg announced himself as very much opposed to an extension of the period of delinquency, and thought it should be but one year instead of two, as the further a man gets in arrears the more difficult it is to get him to pay up.

Mr. Sheppard thought Mr. Hallberg would hold a different view if he were treasurer. Naturally, with a large and scattered membership, one finds a great many careless men—not intentionally so, but men who simply drift along; and sometimes a personal interview, or a few personal letters written at intervals, will change their attitude and cause them to pay up. No iron-clad rule in a voluntary association can be fixed, as a great many men do not care whether their names are dropped or not. As an illustration of how the thing sometimes works he stated that he had collected five years' dues from a member since coming to this meeting.

Mr. Godbold, of New Orleans, agreed with Mr. Sheppard, speaking from his own experience in such matters.

Mr. Mayo called attention to the fact that the carrying of delinquent members entailed no additional expense on the Association, as no copies of the Proceedings are furnished such members until they pay up.

Mr. Payne, of Georgia, agreed that the time should be extended. He himself belonged to a number of organizations, and he had found it hard to keep up with them. He had just had the experience in this Association of failing to remember when his subscription was due, and feared he would not get his copy of the Proceedings promptly.

Mr. Frank H. Carter, as Treasurer of the Indiana State Association, gave his experience as bearing out the statements of Mr. Sheppard. At the last stated meeting he had collected dues for five years back from quite a number of men, and it had not cost the Association anything to retain them on the roll.

In reply to a question by Mr. Gorgas, of Harrisburg, Pa., Mr. Sheppard said it would cost the Association nothing at all to carry these delinquents for three years, as copies of the Proceedings were not furnished until they paid up.

Mr. Ewen McIntyre, of New York, was in favor of leaving the matter stand as it was, dropping after two years, as he did not believe in encouraging careless men to become more so.

Mr. Sheppard's motion to extend the time of delinquency to three years was seconded by Mr. Payne, and carried.

The Secretary called attention to two proposed amendments to the By-Laws affecting the Section on Historical Pharmacy, to bring the By-Laws into conformity with action heretofore taken by the Association, and moved their adoption.

The motion was seconded and carried.

Said amendments were as follows:

Amend Article II, Chapter VIII, by changing the word "four" in the first line to "five," and adding after the words "and Education" the following: 5. Section on Historical Pharmacy.

Amend Article I, Chapter IX, by inserting after the words "and Dispensing," in the line next to the last, "a Committee on Historical Pharmacy."

Amend Chapter IX by adding another Article, as follows: Article XI. The Committee on Historical Pharmacy shall be elected by the Section on Historical Pharmacy. It shall arrange the business of the Section and shall present annually matters of special historical interest in pharmacy. It shall also secure the collection of letters, papers, etc., written by members of the Association, which when so collected shall remain in the custody of the committee and be available for reference to any one interested.

Mr. Whelpley, Secretary of the Council, presented the application of Edward Ferger, of Indianapolis, for membership, and stated that if there was no objection his name would be added to the list of members proposed by the Council. So ordered, on motion of Mr. Hallberg.

In this connection Mr. Whelpley said that the total membership to date now on the books was 1,989, lacking only 11 of being 2,000—including the member just elected—and that this was high-water mark in the history of the Association. He added, however, that this would be reduced by about 75 suspensions. The name just presented brought the list of new members for this year up to the splendid showing of 311, a figure never before equaled.

The Secretary brought up the matter of an amendment to the By-Laws, offered by Mr. Hynson at the first session, in regard to a change in the manner of electing officers of the Association, and explained its effect in giving to the membership at large an opportunity to vote by ballot for officers of the Association.

Said proposed amendment was as follows:

Amend the By-Laws by changing the numbers of Chapters I, II, III, IV, V, VI, VII, VIII, IX and X to Chapters II, III, IV, V, VI, VII, VIII, IX, X and XI respectively, and add another chapter to be known as Chapter I, as follows:

Chapter I.

OF THE ELECTION OF OFFICERS.

Article I. A Nominating Committee shall be annually chosen, whose duty it shall be annually, at the meeting, to select candidates for the offices of President, three Vice-Presidents and three members of the Council.

Article II. The Nominating Committee shall submit the names of three persons as candidates for each of the offices of President, First Vice-President, Second Vice President, Third Vice-President, and three members of the Council. These names are to be submitted by the General Secretary by mail to every member of the Association, together with a request that the member indicate his preference on a ballot enclosed for that purpose, and return the same by mail within one month after the adjournment of the annual meeting.

Article III. The ballots received as indicated in the preceding article are to be sent by the General Secretary to a Board of Canvassers, composed of three members to be appointed by the President, who in turn shall certify to the General Secretary the result of the election, after which the latter shall be published in the *Bulletin* of the Association.

Article IV. The officers thus elected by a majority vote of the members of the Association shall be installed at the final general session of the next annual meeting.

Article V. The Reporter on the Progress of Pharmacy, the Treasurer and the General Secretary shall be elected annually by the Council.

Mr. Hynson, as the mover of the proposed amendment, expressed his belief that this was a matter of serious moment, and moved that it be referred back to the Council, for consideration and report at the next annual meeting.

Mr. Sheppard agreed that this would be a good disposition of the matter, but thought the members present who were not members of the Council should express their views upon it at this time, so the Council might have the benefit of them.

There was no discussion of the proposition, and the motion to refer to the Council was adopted.

The Secretary stated that there were several resolutions which had been placed in the hands of the committee authorized to be appointed for that purpose. and they would now be called up, so the Association could take action upon them before adjournment.

Thereupon Mr. Hallberg, having the resolutions in charge, stated that three resolutions had been adopted by the Section on Commercial Interests, and by direction of the Section were now placed before the Association. The first was a resolution directed against the passage by Congress of the Parcels Post Bill:

RESOLUTIONS AGAINST PARCEL POST LEGISLATION.

WHEREAS, The distribution of merchandise has become an important question to the people of the United States, as shown by the attention bestowed thereon by the Congress, and also by the General Assembly of many States, and

Whereas, The distribution of merchandise imposes many conditions on the different branches of trade. which do not exist in the methods for transmission of communications, or dissemination of news. Therefore be it

Resolved, By the American Pharmaceutical Association that a distinction should be made between these two operations, and that legislation by the Congress should be directed to the readjustment of the laws, rules and regulations of the Postoffice Department so as to secure the greatest possible benefit to the people by improved service, limitation of the privileges of second class matter so that it shall more strictly conform to the laws and regulations, so that the long sought and long-ago-earned reduction of the letter postage to one cent per ounce may soon be established, and

Whereas, Certain corporations now enjoy privileges because of their gigantic operations, not available to ordinary dealers, and depend on the extension of these special privileges to still further encroach on the established methods of trade. Therefore be it

Resolved, That the State Pharmaceutical Associations and all local branches of the American Pharmaceutical Association, and all members of this Association individually, and all retail and wholesale druggists, direct the attention of the Senators of their respective States, and their Representatives in Congress to protect the people from further encroachment of the legitimate functions of the Postoffice Department, by opposing with all their power the so-called Parcel Post Legislation, because such encroachment would be of no real benefit to the people at large, and would simply aid in extending the business of gigantic corporations to the detriment of the great army of retail distributors of merchandise, constituting about one-fifth of the entire population of our country, and be it further

Resolved, That the Congress enact such further legislation as may be required to prohibit special privileges, rebates, etc., by the common carriers and express companies. And further

Resolved, That the rules to be adopted by the departments of the Federal Government for the interpretation and enforcement of the Pure Food and Drug Law be so constructed as to require all drugs sent through the mails strictly to conform to the letter and spirit of the law.

Mr. Anderson, seconded by Mr. Claus, moved to adopt. Carried.

Mr. Hallberg offered as the next resolution to be acted on one in regard to the enforcement of the Pure Food and Drug Law:

RESOLUTION ON THE ENFORCEMENT OF THE PURE FOOD AND DRUG LAWS.

WHEREAS, The rigid enforcement of pure food and drug laws reveal possibilities of undue hardship to conscientious druggists, owing to the faulty construction of such laws, it is our opinion that although it is the desire of our Association to assist in all commendable efforts to insure the sale of drugs of the highest degree of purity and value,

Resolved, That our legislative committee be instructed to co-operate with similar committees of state pharmaceutical associations, in advising such provisions in new state enactments, as well as amendments to existing laws as may secure their enforcement without subjecting pharmacists to unjust prosecutions.

Mr. Hynson, seconded by Mr. Beal, moved to adopt. Carried.

The next resolution was one in regard to women pharmacists:

RESOLUTION IN REGARD TO WOMEN PHARMACISTS.

WHEREAS, The general expression of satisfactory experience of members who have in their employ women pharmacists, is worthy of more than passing comment. Considering the present scarcity of assistant pharmacists and the meager prospect of any immediate improvement in this respect, we believe the ultimate solution of the problem lies in the encouragement of especially qualified young women to enter on the occupation of pharmacy. Therefore, be it

Resolved, That wider publication be given to the favorable reports obtained from sources where women pharmacists have been employed.

This resolution was adopted on motion of Mr. Beal, seconded by Mr. Claus.

Mr. Hallberg presented the following resolution on the Council of Pharmacy and Chemistry of the American Medical Association:

RESOLUTION ON THE COUNCIL OF PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION.

WHEREAS, The American Medical Association through founding the Council of Pharmacy and Chemistry has shown its desire to reform the Materia Medica and the abuses of pharmaceutic practice and

Whereas, The reports of this Council have already demonstrated the importance of this work and caused a realization of its necessity by the medical profession of this country, and

Whereas, This manifest interest of the medical profession in the United States Pharmacopœia and the National Formulary and the decision voiced by the A. M. A. as well as many leading medical men and societies that the medicinal articles and preparations of these two standards should be given preference over proprietary articles of indefinite origin and composition and often of variable strength and greatly exaggerated claims of therapeutic properties, will eventually restore to the pharmacist the privilege and prerogative of preparing and compounding drugs, chemicals and medicines, and

Whereas, The membership of this Council of five pharmacists, five chemists and five pharmacologists comprises ten members of our Association. Therefore, be it

Resolved, That the American Pharmaceutical Association deeply appreciates the advantages and benefits derivable by the retail pharmacist as well as the effect this movement will have in elevating the status of pharmacy and advancement of the profession at large and that it favors the fullest practical co-operation through its members with the A. M. A. and its Council on Pharmacy and Chemistry.

On motion of Mr. Eberle, seconded by Mr. Apple, this resolution was adopted.

Mr. Seaman, of New Jersey, asked how this was to be brought before the retail pharmacists of the country, and Mr. Hallberg replied through the "Bulletin." This suggestion resulted in a sparring-match between these gentlemen as to whether the mere mailing of a copy of the "Bulletin" was sufficient to attract the attention of the busy retail pharmacist. The President suggested the pharmaceutical press as a most valuable means of communication.

Mr. Hallberg read a resolution on a Committee on Organization Plan, explaining that a great deal of the time of the Association was taken up in listening to reports of the Council's doings, and it was thought by some of the members that all this business could be transacted without reference to the Association, if there was a change in the Constitution so as to make the Council more representative:

RESOLUTION ON COMMITTEE FOR ORGANIZATION PLAN.

Whereas, The transactions of the Association and the various Sections have grown immensely owing to the greatly extended activities of the American Pharmaceutical Association;

Resolved, That the business of the Association should be more concentrated and concerted, and that a Committee of five be appointed by the President to report a plan for such purpose to the next annual meeting of the Association.

On Motion of Mr. Wilbert, seconded by Mr. Payne, the resolution was adopted.

A resolution was also offered and adopted in regard to anti-narcotic legislation to the effect that owing to the peculiar condition in which the Pure Food and Drug Law, recently passed by the Congress, left the question at the present time, and pending the rules and regulations to be promulgated by the Departments in Washington, the subject was referred back to the committee for further consideration.

Mr. Hallberg said there might possibly be some conflict in the action taken, therefore he would suggest, with the approval of Mr. Beal, that this resolution be referred to the Council. Mr. Apple seconded this motion and it was adopted.

Mr. Hallberg presented the last of this series of resolutions, one referring to the San Francisco disaster:

RESOLUTION ON CALIFORNIA DISASTER.

Whereas, The dreadful calamity which afflicted early this year the residents of the Pacific Coast affected also many of our members, therefore be it

Resolved, That our sympathy is extended to the residents of the Coast generally, to the members of the American Pharmaceutical Association and especially to the California College of Pharmacy and its worthy dean, Professor W. M. Searby, of San Francisco.

On motion of Mr. Apple, seconded by Mr. Anderson, this motion was adopted.

The General Secretary announced that this completed all the business on his desk.

THE PRESIDENT: As far as we know, no further business demands our attention. We are about to install our newly-elected President and other officers, but before doing that I have a word to say to this body. I realize we have had a prosperous year. It has been a strenuous year for your President, busy man as he is, but it has not been an irksome duty to perform—perhaps the most pleasant of his life, especially as associated with American pharmacy; and if I were to look around to find a point of discrimination, I could not do so. I have been in close touch with the committees, some of your selection, others appointed by the President, and still others by the Council; and I want to say that nothing but the heartiest acknowledgment of kindness can be expressed in truth. If we have had a successful year, it has been because the committees have realized the responsibility, and have shared it with your President. I would be false to my position, if I did not in this brief manner express myself.

The Chair then appointed Mr. John F. Hancock, of Baltimore, and Mr. J. U. Lloyd, of Cincinnati, a committee to conduct the President-elect to the chair.

These gentlemen performed the pleasant duty assigned them, and brought Mr. Eliel forward amid the applause of the members. Mr. Hancock introduced him as a loyal member of the American Pharmaceutical Association, and as one who would faithfully discharge the duties imposed by the office which he was about to assume.

THE PRESIDENT: I have the honor of presenting to this Association Mr. Leo Eliel, of South Bend, Ind., as my successor in the office of President. In doing so, I feel a very present satisfaction that Mr. Eliel is capable and entirely able to take charge of the duties that will fall upon him. I assure you, sir (turning to Mr. Eliel), as I invest you with this badge of your authority (the President's badge), which, as so well said by my predecessor—is a very honorable badge—it will never bring the blush of shame to your face, if you discharge faithfully the duties of that high office. I realize that what we are now doing will become a matter of great significance to you, as never before in your life. I congratulate you, I congratulate the Association, on your election to this place. (Applause.)

Mr. Eliel responded:

Fellow members of the American Pharmaceutical Association: Words fail me at this time to express my feeling of gratitude for the great honor you have conferred upon me —the highest honor that may be conferred upon a pharmacist in this country. I trust that with your assistance I may be able, when the time comes, to return this token of authority, which has passed through the hands of so many illustrious predecessors, in a manner entirely satisfactory to you. I am not feeling well this morning, and I trust you will pardon me for not saying more. (Great applause.)

President Eliel took the chair.

Mr. Lemberger stated that both First Vice-President elect William Mittelbach and Third Vice-President Thos. P. Cook had left, but suggested that the same committee escort Second Vice-President C. S. N. Hallberg —" our strenuous friend Hallberg "—to the rostrum. Continuous applause greeted the gentleman as he came forward with his escort, showing his unmistakable popularity with the members, and Mr. Hancock introduced him, though he said it was hardly necessary, as he was so well known, and besides, " could always introduce himself" when occasion required.

President Eliel, in the chair, congratulated Mr. Hallberg on his elevation to the office of Second Vice-President, and was *seen* to say some other things that nobody could hear, which moved Mr. Hynson to remark that he " didn't think the President and Vice-President ought to have secrets from the Association "—especially this early in the game.

Mr. Hallberg thanked the members for the unexpected honor conferred, expressed his appreciation, and promised to do all in his power to be of service to the Association.

Mr. Lemberger said a problem was presented for the Association to solve, in the fact that the Third Vice-President had also been elected Local Secretary of the meeting in New York City next year, and suggested that Mr. Beal, " the law-adviser of this particular commonwealth," could probably throw some light on the situation as to what was the proper thing to do. Mr. Beal replied that he was not sufficiently informed at the moment to give an opinion of value, but he felt there was no menace to the welfare of the Association in leaving the matter open for the time being, and suggested that it be left to the Council for any necessary action later.

The matter was not further pressed.

The same committee conducted Mr. C. Lewis Diehl, as his own successor as Reporter on the Progress of Pharmacy, to the stand, and there " consolidated " him, so to speak, with Mr. S. A. D. Sheppard as his own successor as Treasurer and Mr. Chas. Caspari, Jr., as his own successor as Secretary. Mr. Hancock then introduced these gentlemen as " the great bulwark of the Association," a trio that had given valuable service to the Association for many years past, and who it was hoped would hold their positions for many years to come.

Mr. Caspari, as the "junior member" of the trio, expressed grateful thanks for himself and his associates for this evidence of the continued confidence of the Association, of which they hoped to show themselves not entirely unworthy by subsequent deeds.

The same committee brought Mr. J. P. Remington and Mr. J. L. Lemberger forward, as two of the three new members of the Council present (Mr. Chas. E. Dohme, the third member, not being present at the meeting), and Mr. Hancock introduced them. Mr. Remington briefly thanked the members, and said they would try to do their duty.

Mr. Lemberger moved a vote of thanks to Local Secretary Carter and his excellent wife, and to the other ladies and gentlemen of the Local Committee, who had so ably taken care of the social and entertainment features of the meeting, and coupled with the motion a vote of thanks to the press of the city of Indianopolis for its good work in reporting the daily proceedings. This motion was seconded by Mr. Apple, of Philadelphia. President Eliel added a personal note of appreciation of the unexcelled work of the local press, and declared he had never known the press to give as correct reports of the meetings as had the press of Indianapolis. Mr. Payne, of Georgia, moved that the vote be a rising one, and it was so put, and carried unanimously and enthusiastically.

Mr. Lemberger then moved a vote of thanks to the management of the Claypool Hotel for the splendid facilities afforded for the meeting, in the way of convention-halls, ample committee-rooms, etc., and for the excellent attention to the wants of the members in every way. This motion was seconded by Mr. Hays, of New York, and, at the suggestion of Mr. Hancock, was carried by a unanimous rising vote.

Mr. Mayo moved that the thanks of the Association be tendered the retiring officers for their admirable work done under very trying circumstances. He declared that this had been one of the most strenuous weeks of work in the history of the Association, with its several simultaneous sessions, and memorable for the amount of work accomplished, for the interest of the proceedings, and also for the collateral work done through the officers of the Association, who had been able to do just the right thing at the right time, despite the fact that they had practically to reverse the law of physics and accomplish the impossible thing of being in two or three places at one and the same time. The motion was seconded by Mr. Payne and Mr. Claus and carried unanimously by a rising vote.

Mr. Lloyd, of Cincinnati, moved a vote of thanks to Mr. J. K. Lilly and the firm of Eli Lilly & Co., of Indianapolis, for their unusual attention to the members of the Association during their stay in the city, and the motion was seconded by Messrs. Lemberger and Helfman and carried unanimously.

Local Secretary Carter thanked the Association for the action just taken as to the Local Committee, and reminded the members that he had said at Atlantic City that it was deeds and not words that the Association wanted, and whatever degree of success they had been able to attain had been because they had continually borne this fact in mind.

Mr. Sheppard moved that the congratulations of the Association be tendered the venerable Ewen McIntrye, of New York, upon the fact that he, a man of eighty-two years of age, was not only able to attend the meeting of the Association, in the full possession of health and faculties, but that he should be able to take the Chairmanship of a Section (the Section on Historical Pharmacy). The motion was heartily seconded by Messrs. Hancock and Anderson.

Mr. Mayo, speaking in a vein of light humor, said he felt that he, as the *senior* member from New York had a right to say something on this motion, and then went on to describe how this young man (!), who had come out with him from the East, had run along ahead of him at the railroad station upon starting, causing him to have a hard time to keep up with him, and how he thought such an active young man should be encouraged to do some work for the Association—especially as he had only been a member of the Association for some thirty or forty years!

Mr. Hynson said he thought it was hardly to be expected that a newspaper man of the age of Mr. Mayo could keep up with a retail druggist of the age of Mr. McIntyre.

The motion of Mr. Sheppard was then carried by a unanimous rising vote, and with hearty applause.

Mr. McIntyre thanked the Association for the action just taken, but attributed his long life and preservation to no virtue in himself. He said it seemed very singular to him that he should have lived to stand here in the great city of Indianapolis, with its quarter of a million people, at this late day, when he could well remember as a little boy seeing the trains of emigrants coming out to settle Indianapolis in 1834, 1835 and 1836, passing his father's house on the road between Troy and Utica, in New York State. It seemed truly extraordinary that a man's life could be lengthened out to see such wonderful results. Replying to Mr. Mayo's badinage he said, that it was not remarkable that he should outstrip a gentleman encumbered with so much weight of wisdom, as well as weight of physique.

The Chair stated that unless someone had something to offer especially, he would declare the fifty-fourth annual meeting of the American Pharmaceutical Association at an end.

It was so ordered, and the Association stood adjourned, to meet in New York City next year, at the time to be fixed by the Council.

MINUTES

OF THE

SECTION ON EDUCATION AND LEGISLATION.

FIRST SESSION—TUESDAY AFTERNOON, SEPTEMBER 4, 1906.

The Section was called to order at 3:30 p. m., by Chairman Oldberg, of Chicago.

The Chair stated that before proceeding with the regular order of business according to the program, there were a few announcements to be made. He said the program was to be found in the issue of the *Bulletin* for August, now being distributed, and that a few programs containing additional information could be found on the Secretary's desk. Secretary England announced that Mr. John F. Hancock, Chairman of the Committee on Procter Monument Fund, would have a table in the room, and would be glad to receive contributions to the fund from the members present.

Chairman Oldberg called Mr. England to the chair while he read his address. Before proceeding to do so, he said he felt that he had a duty to perform, and that, while some of his ideas might not strike the members quite so pleasantly as some others they had listened to, he had good reasons for his criticisms made here and there, and he hoped no one would take offense. He said it was not pleasant to any of us to listen to the truth, and not pleasant always to have to tell the truth, but in this case both things had to be done.

Fellow Members: A year ago you summoned me to perform the duties of Chairman of this Section. These duties, as I understand them, consist chiefly in the presentation of facts and conditions which more than others seem to require our attention. I have endeavored to prepare myself for this task by studying as well as I could the most obvious present conditions and needs of our profession, the laws under which we practice it, the manner in which these laws are enforced, our standards of education, and the means by which the necessary training for the practice of pharmacy may be secured. It has been a difficult task and I shall call your attention to only a few of the problems which I believe we are called upon to solve.

OUR RELATIONS TO THE PUBLIC.

Pharmacists stand in a peculiar relation to the public. This relation is too generally overlooked or ignored, or it is recognized only in a one-sided fashion.

We are all willing that the practice of pharmacy shall be restricted to our hands—that none but pharmacists shall be permitted to prepare, dispense or sell medicines to the public, but we are delinquent in paying the price. Pharmacy laws have been enacted by which the people say to the pharmacist: In consideration of the protection afforded the public health by your special education and skill and your faithful service the exclusive right to sell drugs and medicines shall be yours.

In fact the people have virtually turned over to the pharmacists themselves the regulation of the practice of pharmacy, so that we are put upon our honor in carrying out our end of the contract.

The question we must be able to answer to the satisfaction of the people is this: What are the results of our administration? If these results are plainly unsatisfactory and it is found that the rights of the public and the medical profession are not reasonably satisfied, then will our stewardship be taken from us.

The public generally believes that all druggists are required by law to be competent pharmacists. But the pharmacy laws are such that if our pharmacists were not in fact better educated than these laws require them to be the public would be without that protection which it demands.

The agitation of the quack nostrum evil, the enactment of pure food and drug laws, the public awakening to the abuse of habit-producing drugs—these and other topics of the day must sooner or later place the pharmacy laws and the practice of pharmacy in the lime-light. The public will then discover the wretchedly low legal standards of education for the practice of pharmacy and will inevitably proceed to change them without consulting us. The changes may be drastic. Shall we follow the example of the meat packers and let the storm overtake us unprepared, or shall we put our house in defensible order?

THE ATTITUDE OF THE DRUGGIST TOWARD BETTER EDUCATION.

Druggists complain that their business is highly unsatisfactory. Competition is excessive. Profits are small. Expenses are heavy. They say there is no longer any scientific or technical work for the pharmacist to do. Many of them laugh at the idea that technical education is necessary in their business. They declare that higher educational requirements only increase their expenses by diminishing the supply of clerks.

I am sure the real evils we suffer from can be remedied to a great extent by a reasonable interpretation and enforcement of most of our existing laws.

It is impossible to prevent excessive competition in the drug business except by establishing higher educational requirements for the license to open or conduct a pharmacy, while the remedy for the scarcity of drug clerks lies in a rational recognition of the difference between principals and clerks. We cannot eat the cake and keep it, too. Every pharmacy law which recognizes only one class or grade of pharmacists must inevitably work injury to the public as well as to the pharmaceutical profession, for if the standard of education under such a law is high enough to really check the multiplication of drug stores, a scarcity of clerks will be the unavoidable result, whereas, if the educational requirements for license are low enough to provide an abundance of clerks, these clerks will rapidly become proprietors by starting new stores. Every pharmacy law should, therefore, recognize both principals and clerks, and should establish higher educational qualifications for the license which confers the right to open or conduct drug stores than for a license to practice as an assistant or clerk.

But we find that in states where the pharmacy laws do make a distinction between registered pharmacists and registered assistant pharmacists there is nevertheless an excessive number of pharmacists and a ridiculously small number of assistants. The reason must be that it is too easy to secure the higher license. Many State Board members have begun to realize this and are striving to "make the examinations stiffer."

I want to call your attention to a few facts. To make these facts clearer I shall call registered pharmacists "druggists," and assistant pharmacists "clerks." Do you know that in the state of Indiana there are nearly two druggists to every drug store, and about one-fifth of one clerk? In Illinois two druggists and one-third of a clerk. In Ohio one and one half druggists and one-third of a clerk. Not one state have I found in which the proportion of assistant pharmacists bears a rational relation to the number of drug stores. Not one in which there are not too many registered pharmacists ready to open up new drug stores as soon as they have a chance. These conditions should be radically changed.

Compulsory graduation in pharmacy as a requirement for full license would of course serve as a check upon the increase of drug stores. Nothing else will. At the same time that is also the very thing required to satisfy the demands of the public and the medical profession. But a large number of druggists are apparently as afraid of so-called "prerequisite laws" as women are of mice. They must be blind as well as over-timid.

AM I MY BROTHER'S KEEPER?

We all suffer from the reproach which our low standards of education invite. The fact that the membership of the American Pharmaceutical Association consists of pharmacists of a high order, does not suffice to protect the profession as a whole from that reproach. The public and the medical profession will judge us by our laws and by the attitude of druggists in general toward better education. That our State Pharmaceutical Associations repeatedly vote down every proposition to increase the educational requirements in any degree brings odium upon us all. We are all bound up together. The rule "every one for himself" will not do. You are your brother's keeper whether you will or not.

THE RELATIONS BETWEEN PHYSICIANS AND PHARMACISTS.

Pharmacy as a distinct occupation will never cease to exist. Scientific pharmacy is indispensable to scientific medicine. Physicians and pharmacists who do not thoroughly recognize that truth have not studied the question.

For a generation the physicians have been weaned away from the pharmacists. They forgot that all really tried and useful drugs are either already in the pharmacopœias or sure to be included in them as soon as definitely known or recognized. There were several reasons why physicians so extensively prescribed ready-made remedies and combinations of remedies instead of writing prescriptions for these same remedies in the well-known officially-recognized forms, and ordering their own proportions and combinations, leaving the task of dispensing and compounding to the pharmacist. You know the whole story well.

But we should never forget that the chief reason why so many physicians deserted the pharmacists was defective education. Ignorant and thoughtless persons are to be found in all pursuits including the "learned professions." Ignorant, poorly educated or thoughtless physicians do not understand and appreciate the value of the services of competent pharmacists. The services of ignorant and incompetent pharmacists have no value.

Highly educated, high-minded, conscientious physicians who were unconsciously led into prescribing ready-made medicines and proprietary preparations in no way superior to the drugs and preparations of the pharmacopœia have had their attention called to the pitfalls and uncertainties of such a practice and have entered upon a vigorous reform movement which specifically promises and includes the employment of the pharmacist's services to a greater extent hereafter than ever before.

Shall we not meet these physicians more than half way! Shall we be caught napping? Shall we not clean house and welcome them? If they find that the ranks of pharmacy are recruited from the primary schools and that no professional education is required for the practice of pharmacy, they will be compelled to turn from us in disgust and dismay. They will of course, inquire what the certificate of registration and license to practice pharmacy is worth—what it means, what protection it gives. We cannot expect them to become personally acquainted with the pharmacists so as to know of their own observation and experience whom they can afford to trust and then to compel their patients to patronize no others.

It will do us no good to tell the physicians that while our pharmacy laws do not prescribe any education they do prescribe examinations. Examination is not education and can never take its place. If you say that the purpose of the examination is to discover the education, and that education is what you really want, the rejoinder of any sane man must be: If education is what you want why do you not say so in a direct and definite way? Why do you beat around the bush? Why do you not walk in at the front door instead of trying to crawl in through the chimney? If you honestly want to exclude from the pharmaceutical profession all men who do not have enough education to make that profession respectable and respected, why do you persistently oppose even such a palpably low standard of preliminary general education as one year's high school work.

Physicians are reasonable when they say that high-school graduation is not too much to ask of all who propose to become pharmacists. They are more than justified in saying that to admit primary school boys to the ranks of the pharmaceutical profession is conclusive proof of utter contempt for the rights of the public and the medical profession and a sad evidence of the low estimate which pharmacists themselves place upon the importance of their services.

Professor William Procter, Jr., whose memory we are specially honoring at this meeting, was an earnest advocate of better preliminary education for the apprentices in drug stores. Yet, the apprentices of his day were of a higher grade educationally than those of to-day.

The opposition to respectable educational standards comes largely from the so-called "self-made" men who boast that they succeeded without education. They are no doubt sincere. But a self-made man often has a too high opinion of his own value and power and a too low opinion of those who are better equipped than he. If the want of education insures success then the self-made man has nothing to boast of. The self-made man who is really great and strong is he who fully realizes how much stronger he would have been if he had not been self-made.

Intelligent men want neither self-made physicians nor self made pharmacists.

OUR PHARMACY LAWS.

Lord Chancellor Coke of England said that "Law is the perfection of reason." But Lord Coke lived at the end of the sixteenth and the beginning of the seventeenth century. He had never seen our American pharmacy laws which are products of the nineteenth and twentieth centuries. We have made great progress in the past one or two centuries and our laws are now beyond reason.

I can not impose upon your time and patience by presenting here all of the remarkable deviations from the "perfection of reason" which characterize our pharmacy laws; but in order to show you the rate of progress we are making and how much more advanced our most recent laws are than the older enactments I shall quote a few words from the laws passed this year in the District of Columbia and in Iowa. The Act of Congress approved May 7, 1906, provides that applicants for license in the District of Columbia "shall have had at least *four* years experience in the practice of pharmacy, or shall have served *three* years under the instruction of a regular licensed pharmacist, and any applicant who has been graduated from a school or college of pharmacy recognized by said Board as in good standing, shall be entitled to examination upon presentation of his diploma." "The bearing o' them observations lays in the application on 'em." Not being endowed with the legal acumen of Lord Chancellor Coke or of our own esteemed Professor James H. Beal, I was unable to unravel the inner meaning of that law, so I wrote to the Board of Supervisors in Medicine and Pharmacy of the District of Columbia asking for an official interpretation. The answer I received was that all applicants for license to practice pharmacy in the District must prove that they have had four years' experience, but no light was shed upon the reference to graduates. I then wrote again asking why graduates were mentioned at all since graduation is not compulsory and graduates are not exempt from examination nor given credit in any form for their technical education. The Secretary, in reply, promised to lay this conundrum before the Board, and I may yet be informed of the hidden significance of the lines referring to graduates.

I wish to call your attention to the fact that Congress took the enforcement of the pharmacy law out of the hands of the Board of Pharmacy in the District of Columbia and placed it in the hands of the medical men, reducing the Board of Pharmacy to a committee of examiners in pharmacy without any other functions. Is not that fact a significant straw? If the execution of the pharmacy law is transferred to medical men at the capital, how long will it be before this precedent is followed in the states? Not long, indeed, if the present neglect of reasonably respectable educational requirements continues.

In Iowa the new law which is to take effect October 1, 1906, provides that graduates of reputable schools of pharmacy shall be eligible to take the examination and be licensed without any experience whatever in drug stores. Just think of it!

THE BOARDS OF PHARMACY

have a hard time of it. With such absurd, vague, contradictory, stupid laws as we have, they find it difficult to remedy the grossest evils. The rights of the people are heartily supported by self-respecting professional pharmacists who favor respectable educational standards. The purely commercial druggist blindly opposes better education because he imagines that educational requirements must hit his pocket-book, and does not care a fig about his obligations to the public.

Politicians and grafters want to use the pharmacy laws for other ends.

Members of the Boards of Pharmacy should be experienced druggists who have been in business on their own account for at least five if not ten years, conducting pharmacies in which the prescription department is a large part of the whole establishment. Every Board member should possess all the educational qualifications which may be reasonably exacted of all licentiates. They should have a general education equivalent to that signified by high-school graduation. Hereafter, since graduation in pharmacy is now a requirement for license in two states, they should also be graduates of good pharmaceutical schools. Not all good practical pharmacists are fit to be Board members. Not all graduates are fit. But men who are both experienced and well educated are the kind that should be selected if they are at the same time matured, broad-minded, public-spirited men, who take a pride in their profession, and who will conscientiously study their duties and perform them faithfully without fear or favor.

It affords me great satisfaction to be able to believe that a great majority of the members of the Boards of Pharmacy are competent, broad-minded, public-spirited, conscientious men. But they are not all of that stamp. In our day Tom, Dick, and Harry are unafraid to undertake anything and everything without the slightest special fitness or preparation, and other people are generally too timid or too fond of their own comfort and peace of mind to speak out against flagrant abuses. I must confess that I am far from pleased to condemn our system, but I cannot afford to do otherwise.

Plain common sense would admonish us that no man should undertake to be a teacher who has never been a real student himself. No man should accept the post of examiner and then hold examinations which he himself cannot pass. No man should accept any public office, the duties of which he is unable or unwilling to master. Yet we do have some members of Boards of Pharmacy who are unfitted for their posts.

The great majority of pharmacists, including the Board members themselves, have probably never fully realized the importance of the Boards of Pharmacy and the real dignity and magnitude of their functions when properly understood and fully performed. The duties of Board members are not light unless performed in a merely perfunctory way.

THE POWERS OF BOARDS OF PHARMACY

are as a general rule most ample. It would be perfectly safe for the Boards to do all that can reasonably be expected of them to exact higher educational standards.

There are usually two extremes possible in any course of action. In the enforcement of the pharmacy laws one extreme is to place the standards of qualifications for license too high, so that the pharmacists can not comply with them without paying a price altogether out of proportion to the value received; the other extreme consists in making the educational requirements for license so low that the public receives nothing in return for the exclusive privileges it gives the pharmacist. Between these extremes lies a navigable channel called *reasonableness*.

The Board of Pharmacy is the umpire which must see to it that there is fair play. It must do justice to both the public and the pharmacist. There are those who already question the wisdom of turning over the regulation of the practice of pharmacy to the pharmacists themselves. Therefore let the Board of Pharmacy not forget the rights of the public.

The only limit to the power of the Boards of Pharmacy to fix or define the qualifications of applicants for license is the limit of reasonableness. The pharmacy law of Minnesota says nothing about the general preliminary education which should be required of applicants for license. The Board asked the Attorney-General of the State whether it had the power to prescribe whatever standard it deemed requisite, grammar-school graduation or high-school graduation. He replied that the Board has wide discretionary powers and can do whatever is reasonable.

The fact is that in most of our States. as the laws now read, the Board of Pharmacy is the sole judge of the qualifications which should be exacted of all persons to whom licenses are issued. The Board has ample power to demand not only one year's high school work but four years of it if it so decides. It has also the right to demand graduation from a proper school of pharmacy. It has the right to decide what constitutes a proper school of pharmacy. It has the power to examine into the qualifications of any candidate, whether by taking stock of what that candidate has done and the examinations he has already passed before any examiners whose ability and honesty are entitled to confidence, or by examinations held by its own members, or by examinations held by examiners of its own selection. It has the power, in its own discretion, to exempt from all examinations graduates who have successfully completed sufficient courses of education in proper pharmaceutical schools, or to exempt such graduates from examination in chemistry, botany, pharmacognosy, materia medica, the theory of pharmacy and any other scientific study adequately covered by their college courses, giving such graduates instead an examination limited to the practical pharmacy of prescriptions and dispensing.

The kind of men who should by all means be members of the Board of Pharmacy must make the very best examiners to test the ability of applicants for license to read and understand prescriptions, to detect errors and dangers in these, to compute doses, and to do the actual work of dispensing in a workmanlike way. I am unable to comprehend why they should insist upon doing more.

The Board of Pharmacy is part and parcel of the State government. It has the power of the State at its back in the enforcement of the law and of all reasonable rules necessary to its proper enforcement. Like other government commissions the Boards of Pharmacy not only can but must learn all important facts having a direct bearing upon their functions. They should invite the opinions and advice of men whose opinions and advice may be of value. They should invite all persons and institutions directly interested to come before them and be heard, and should hear them attentively.

THE REQUIREMENTS FOR LICENSE

should be:

1. Proper age or maturity and responsibility.
2. Sufficient mental efficiency attained by proper preliminary general education.
3. Sufficient technical and professional education in a pharmaceutical school, and
4. Sufficient practical pharmaceutical experience or training under proper conditions in pharmacies where really pharmaceutical work is done including the dispensing of prescriptions.

Satisfactory fulfillment of each of these requirements should be exacted by the Board of Pharmacy which should investigate for itself and demand such evidence as it may deem necessary.

No person should be licensed to learn or practice pharmacy who has not had one or two years of high school education. No person should be licensed to practice pharmacy either as a principal or as a clerk who has not had sufficient drug store experience of the right kind. No person should be licensed to open, conduct or manage a drug store unless he has had at least three years' drug store experience, has served at least one year as a registered assistant, and has graduated from a good school of pharmacy.

It is evident that to the Board of Pharmacy graduation from a school of pharmacy should mean nothing more and nothing less than the successful completion of a sufficient quantity of educational work of the right sort. The educational development and efficiency of the graduate is *the* thing wanted, and that depends upon the quantity and quality of the education. The title or degree of the graduate has no definite meaning, whether it be that of pharmaceutical chemist, graduate in pharmacy, or bachelor, master or doctor. The work at the school is all that counts to the credit of the graduate. The Board should therefore inquire *what* he did, how much he did, how much time was taken to do it, and how well it was done.

The *time* of college attendance is in twenty-one States deducted from the drug store experience required for license. In many of these States the actual number of weeks spent at a college of pharmacy are counted, whether two, or twenty, or thirty-six without reference to whether the student loafed or studied, succeeded or failed, finished the work he had undertaken or left it unfinished. Students who fail utterly at college apparently get as much credit as those who stand high. Clearly no credit whatever should be given for killing time, or for unfinished or unsuccessful school work.

THE BOARD EXAMINATIONS,

judging from the questions used, are in some States very good; in other States very bad. Some examiners seem to think that they must test the qualifications of the candidates as useful commercial salesmen and general clerks instead of testing their efficiency in legitimate pharmaceutical professional work, which is all that the law requires or permits.

The methods and scope of the Board examinations in different States and the kind of questions asked in them, vary extremely. They often seem to be devoid of any plan. One examination sometimes differs from another in the same State in a most remarkable manner.

No information seems to be accessible concerning the nature and scope of these examinations. The candidates can not know how to prepare themselves. This is unfortunate. Every citizen is entitled to know upon what terms he can secure the right to engage in any lawful occupation.

The disorderly fashion in which candidates for license in pharmacy are struggling to get past the Board might be made orderly.

There can be no sufficient excuse for the enormous proportion of failures in the Board examinations. If the examinations are right then the laws and rules which admit so many unfit candidates to take those examinations must be wrong. In one examination there were sixty candidates and every one failed; in another one hundred and eleven candidates of whom ninety-eight failed. Such results conclusively prove that we have no sane system. These failures occurred in States where the Board examinations are among the best.

The candidates who failed must all have had several years drug store experience or they could not, under the laws of those States, have been admitted to the examinations. Evidently, then, those who insist that drug store experience is all that is necessary to the proper training of pharmacists are quite mistaken. The drug stores do not teach chemistry, materia medica and pharmacy. All Boards of Pharmacy examine all candidates for license upon those subjects. If the Board examinations are not to include those subjects, then what should they include? If it is proper that these subjects should be included, then let us all know how much of each, how the candidates can best master what they are required to know, and what the schools should do to satisfy these requirements.

Without any definite plan the Boards do not agree with each other, the courses in one school do not agree with those of another school, and it is impossible for the Boards to make their examinations fit the college courses or for the colleges to make their courses fit the Board examinations, or for the bewildered candidates to know what to do to be saved.

PRELIMINARY EDUCATION.

But the most serious evil of all is the inadequate preliminary general education of the apprentices in the drug stores and the students in the colleges of pharmacy. In the absence of any fixed standards the employer is the judge of the educational fitness of the young men who are to be our successors. He settles the question effectually both for the boards and the schools. Look at the insignificant numbers of the classes that attend schools with proper educational entrance requirements, and the many times as large classes that attend the schools with low admission requirements.

All schools of pharmacy must draw their students from the drug stores.

All schools who uphold high standards would certainly be obliged to close their doors for want of sufficient classes were it not for their endowments, bequests, appropriations, rent free quarters, and other unusual helps. They need sorely all the encouragement they can possibly get. Shall they be denied that encouragement? Do we want the schools closed? Shall we not rather follow the universal example, heed the universal lesson, and encourage education?

Are we honest to our calling, honest to the public, honest to the young men who would succeed us, when we allow young men to become students and apprentices whose preliminary education is so wretchedly poor that their career is almost certainly foredoomed to failure? No. Let us repent and reform.

We are told that a large number of graduates coming from practically all the schools of pharmacy, are unable to pass the Board examinations. The Boards blame the schools and the schools blame the Boards. Perhaps they are both to blame. Let them get together and find out what the trouble is.

This great Association should be the neutral ground where the Boards and schools can be brought into friendly and proper relations. They can each teach the other some valuable lessons.

And, above all, let us now and here begin to construct an orderly, sane, respectable, working system of dealing with the regulation of the practice of pharmacy, the promotion of decent pharmaceutical education, the preservation of the professional honor of our craft, and the prosperity of all of our worthy craftsmen.

REASONABLENESS.

No laws are ideal. They are made up of conventions and compromises. This is not only proper but unavoidable.

The pharmacy laws and the rules of the Boards must all be compromises. But several grades of compromises are possible.

The standards we should set up for ourselves as entirely practicable and attainable within ten or twenty years must include high school graduation and a solid two years' course in a good school of pharmacy.

The irreducible minimum requirements which may very well be put into practice at once are one year's high school work and a college course of fifty-two weeks divided between two years.

The best plan would, therefore, seem to be one that recognizes these limitations, but which is elastic enough to encourage the higher standards while permitting the lower ones.

High school graduates should be enabled to complete all qualifications for license as registered pharmacists in five years after their graduation from high school, and that period of five years should for the present include either three years of drug store experience and two years in a pharmaceutical school, or four years' drug store experience and one year in a school of pharmacy, at their option.

A young man who graduates from high school at eighteen could thus become a registered pharmacist at twenty-three.

A young man of seventeen with one year's high school work to his credit should be enabled to become a registered pharmacist in eight years; one with two years' high school work should be allowed to qualify in seven years; and one having three years' high school work to his credit should become a registered pharmacist in six years.

This graded system would encourage, or at least would not discourage, better education. It would give us more intelligent apprentices and clerks. It would reduce the period of service in drug stores by one year for every additional year of education beyond the irreducible minimum of one year's high school work. It would require the clerks to serve long enough to become sufficiently matured before they can become principals in charge of stores. It would enable apprentices and clerks to put in two years at a good pharmaceutical school without being punished for it by being made to wait that much longer for their license. It would render it practicable to insist that no one should be licensed as a registered pharmacist until after he shall have served at least one year as an assistant. It would enable us to require that no person should be licensed as an assistant pharmacist, and thereby authorized to dispense prescriptions and do all kinds of pharmaceutical work, unless that person has reached the age of legal responsibility. It would enable owners and principals of drug stores to leave their stores temporarily in the hands of trusted clerks who are licensed assistant pharmacists without violating the law. It would enable hard-worked druggists (whose business does not permit them to specially employ a registered pharmacist to take charge during their temporary absence) to attend the annual meeting of the American Pharmaceutical Association or take a reasonable vacation each year instead of making slaves of themselves, thereby reducing their capacity for efficient service to the public.

Let us not have any more beginners in pharmacy whom we would be ashamed to own as our worthy successors. Let us not have any more drug clerks who must be watched by their employer at every turn, or do their work by stealth. I have said elsewhere, let us make the apprentices self-respecting and more contented with their lot by giving them to understand that they are not mere bottle-washers though they must wash bottles. Let assistant pharmacists know that they are not non-entities, but trained, practical dispensers authorized by law to do all kinds of legitimate pharmaceutical work without having their employers looking over their shoulder at all times. Let the clerks know that the only thing a qualified and licensed assistant cannot do in the line of pharmaceutical practice is to run a drug store on his own responsibility, and that the right to do that will come only when he shall have become a registered pharmacist.

It is, in my humble opinion, a grave mistake to ignore the fact that there is, and always will be, a sufficient difference between the principal and the clerk, and between their respective responsibilities. Both should be recognized by our laws, and higher qualifications should be required for more important duties and responsibilities.

There are those who believe, or profess to believe, that there is no good reason why the principal of a pharmacy should be required to measure up to a higher standard of efficiency than the clerk. It is especially denied that any better protection is afforded the public by a higher standard of education for the principal or manager of the drug store if his licensed assistant should be permitted to perform the usual duties of the dispenser during the temporary absence of the principal in case that temporary absence is extended over several weeks. But it may not have occurred to these objectors that the principal of any pharmacy is the man who controls all the supplies and is responsible for the identity and quality of all the medicinal materials in the shop. He furnishes not only the materials, but the tools and other facilities necessary for carrying on the work. The principal is legally answerable for the management of the pharmacy, which must be so conducted that the public is properly served and its welfare safeguarded, but the clerk or assistant is responsible only for his own individual services. The clerk dispenses the medicine furnished by his employer, and does his work under whatever conditions his employer sees fit to impose. The principal is rightfully expected to use his best efforts to see that the materials used are of proper character, purity and strength, and his education must be such that he can perform that duty intelligently. No service of that kind is expected of the clerk. If the proprietor of the establishment is absent for a week or a month he still can, and does, control and direct affairs.

THE IMPORTANCE OF SHOP TRAINING.

The most important part of the training of a pharmacist is sufficient practical experience of the right kind in a pharmacy of the right kind. There is not to my knowledge any respectable school of pharmacy in this country that does not unequivocally subscribe to that proposition. But no diploma of any school or college of pharmacy entitles its holder to practice pharmacy. It takes a license from the Board of Pharmacy to do that. It is not in any sense the duty of any educational institution to accept the responsibility for any drug store training.

The Boards should thoroughly understand this question.

Twenty years ago there were only twelve schools of pharmacy in this country. All but one of them required drug store experience for graduation. Now only four of those twelve schools refuse to confer a pharmaceutical degree without that requirement. These four are the Chicago College of Pharmacy; the Louisville College of Pharmacy; the National College of Pharmacy of Washington City; and the Howard University School of Pharmacy, also of Washington.

Among the pharmacy schools which formerly required drug store experience for graduation and which abolished that requirement in 1893 or after that year, we have: California College of Pharmacy, New York College of Pharmacy, Maryland College of

Pharmacy, Brooklyn College of Pharmacy, the Universities of Wisconsin, Kansas, Minnesota, Northwestern, Ohio, Vanderbilt and several other institutions.

New York is the only state in which any legally binding and fixed standards of efficiency are prescribed governing the recognition of pharmaceutical schools. Twenty-eight schools are registered in New York as complying with those standards. Only one of those twenty-eight schools confers no degree without the drug store experience requirement.

The American Conference of Pharmaceutical Faculties embraces twenty-six schools. Of these twenty-six the only ones that do not confer any pharmaceutical degree without the drug store experience requirement for graduation are the Chicago College, the Louisville, the National, and Oklahoma University—four in all.

Among the colleges which confer at least one pharmaceutical degree without the drug store experience while requiring it for at least one other degree we find: Philadelphia College of Pharmacy, Massachusetts College, St. Louis, Pittsburg and others.

Not one school or college of pharmacy has ever refused admission to any student without drug store experience. No such school ever refused to allow a student to finish his course without drug store experience. No college requiring drug store experience for graduation has ever refused to confer its diploma upon any student who finished his college course first and had all his drug store experience afterwards as soon as he could show that he had had it.

Several things are necessary to make a school of pharmacy efficient, but drug store experience as a graduation requirement is evidently not one of them. It is entirely possible for the poorest school of pharmacy in existence to demand drug store experience for graduation and for the best school not to require it. No man who knows enough about pharmaceutical schools of our country to give his opinion any weight can deny that if the line be drawn between schools that base their diplomas in part upon drug store training and schools that do not, several of our best schools will be found on either side of the line and several of the weakest as well. It is, therefore, evident that any pharmacy law which calls upon Boards to exempt from examination the graduates of schools retaining the drug store experience requirement for graduation and to deny that recognition to the graduates of all other schools must be regarded as wholly obsolete, stupid, unjust, in many cases discriminating in favor of inferior schools and against better schools, and thereby defeating its own ends.

The pharmacy laws of Alabama, Arkansas, Delaware, Florida, Missouri, New Mexico and West Virginia are now the only laws which authorize the Boards to license without examination the graduates of any college of pharmacy prescribing three or four years' drug store experience as a graduation requirement. But the Boards of Florida and New Mexico refuse to license any person without examination.

OUR SCHOOLS OF PHARMACY.

At this writing we have probably eighty-seven schools of pharmacy. There have been several births and deaths during the past year.

An excessive number of educational institutions is not an unmixed blessing.

Here in the state in which we are holding this meeting there are five pharmaceutical schools. In Ohio there are eight. It is impossible that eight pharmaceutical schools can be required and maintained in a condition of reasonable efficiency in any one state.

I have no recommendation to make in regard to this embarrassing wealth of educational machinery, but will say that the Boards of Pharmacy have the power and means by which schools that are unable or unwilling to give good and sufficient courses and which are not properly equipped and do not have reasonably sufficient resources or means of support may be denied that recognition which is clearly due under the pharmacy laws to all efficient schools.

Many of our schools of pharmacy have fine buildings of their own, or less pretentious but still adequate homes. Others are well housed by universities and other institutions. Several of our pharmaceutical schools have a long and honorable record. Several have faculties composed of men of national reputation. Several have ample equipments. Several give very substantial courses of instruction of high grade.

Let us not commit the unpardonable sin of ignoring or losing any of these advantages. Let us foster right education. Let all schools that have any good in them do their best. Let the Boards of Pharmacy take a year, if need be, to learn the facts about our schools and give positive aid and encouragement to them. Let the Boards consult them all. Let no mistakes be made. Let all have a square deal.

THE PURE FOOD AND DRUG LAW.

The National Pure Food and Drug Law passed by Congress this summer contains several features of vital interest to pharmacists. In the first place it specifically recognizes the Pharmacopoeia of the United States and the National Formulary. This recognition of the Pharmacopoeia and Formulary should prompt us in the future revisions of these two works to carefully consider their added importance. One of the most desirable reforms in this connection would be to eliminate from the Pharmacopoeia all formulas for therapeutic combinations and remedies containing two or more different therapeutic agents, and to include all such remedies in the National Formulary, while the Pharmacopoeia should include all simples and all substances of definite chemical composition together with galenical preparations representing single drugs.

One regrettable feature of the Pure Food and Drug Law is the proviso that the titles of the Pharmacopoeia and National Formulary may be used in the sale of articles not conforming to the standards of those authorities provided the seller indicates the deviation. It is fortunate that the law as passed does not contain the absurd proviso that morphine, cocaine, etc., may be sold freely without indicating the composition on the package provided the percentage of poison falls below a certain stated limit. Any thinking man must recognize that the presence of a sufficient quantity of any habit-producing drug in any preparation to give any effect whatever must carry with it the habit-producing effect, and that if a smaller quantity is contained in the preparation it might as well be omitted altogether. Moreover, no matter how small the percent of cocaine or morphine, the preparation may do just as great harm because the doses taken may be multiplied.

The new láw regulating the practice of pharmacy in the District of Columbia contains this absurd proviso but I suppose that the new Pure Food and Drug bill which is of later date annuls that feature of the law applying exclusively to the District of Columbia.

THE SECTION ON PHARMACOLOGY AND THERAPEUTICS OF THE AMERICAN MEDICAL ASSOCIATION.

The chairman of the delegation from the American Pharmaceutical Association to the Section on Pharmacology and Therapeutics of the American Medical Association, Mr. H. P. Hynson, of Baltimore, delivered an address at the annual session of the Association June 5th, in which he set forth the relations of the pharmacist to the medical profession in an admirable manner. Dr. Hynson's address is published in the August number of the Bulletin of the American Pharmaceutical Association.

Surely the American Pharmaceutical Association should continue to utilize this means of annual communication with the American Medical Association to cultivate a better understanding of the duties of pharmacists toward medicine and of the physicians toward pharmacists. Never before within my recollection has the time been more auspicious for cordial co-operation between the medical profession and the pharmacists of the country because the desire of the physicians to again make full use of the services of the pharmacists is strong and clear.

PROPRIETARY REMEDIES.

The American Medical Association as you know, has undertaken in an effective way the investigation of the merits and character of proprietary remedies. It has established a Council on Pharmacy and Chemistry composed of physicians, pharmacists and chemists of the highest standing which is doing very valuable work. I strongly recommend that the American Pharmaceutical Association place itself on record as in hearty sympathy with this movement and that it recommend to the schools of pharmacy active co-operation in the work of the Council. Members of the Faculties of the schools and their post-graduates can do a considerable amount of work with the facilities the schools have at their disposal, and many members of the American Pharmaceutical Association are doubtless able to lend assistance in the same manner.

IN CONCLUSION.

I have endeavored, with the help of my associates, to formulate certain general principles which seem to require discussion and action. These propositions have been circulated among the members of the American Pharmaceutical Association, the Boards of Pharmacy and Pharmaceutical Schools, and unless the printed matter so circulated has gone to the waste basket we shall be prepared to do some actual work at these meetings.

The program is before you, and although the novelty of its features must have worn off, I appeal to you to go through the whole program, dry as it may seem, as a matter of duty to the whole body of pharmacists of this country and I trust further that our deliberations will be free from the friction which is often generated by differences of opinion. Let us all be governed by the one desire to further the welfare of our fellowmen and the true interests of our ancient and honorable calling.

Whatever differences of opinion existed as to some of the points made in the Chairman's Address, it was recognized as an usually strong paper, and many times during the reading his points were applauded, and the paper was vigorously applauded when he had finished.

Mr. Hallberg moved to refer to a committee to be comprised of the one member who should represent this Section on the Committee on Reference and Resolutions, to be announced by the President. The motion was seconded by Mr. Mayo and carried.

Mr. Oldberg resumed the chair.

The report of the Secretary was indicated as the next order of business, and Mr. England, stating that the report was too long to be presented in full at this time, as it embraced some 55 pages of matter, gave a brief synopsis of the queries propounded to the various schools of pharmacy, State boards of pharmacy and State Associations. The full text of the report here follows:

REPORT OF THE SECRETARY OF THE SECTION ON PHARMACEUTICAL EDUCATION AND LEGISLATION.

Gentlemen: In order that a fairly comprehensive report might be made of everything pertaining to pharmaceutical education and legislation for the year 1905–1906, your secretary sent out series of questions to all Schools of Pharmacy, Boards of Pharmacy, and State Pharmaceutical Associations, as shown below, and has compiled the answers received in suitable form for ready reference; regarding the work of the schools and boards of pharmacy, much interesting information will be found in the statistics forming a part of this report.

SCHOOLS OF PHARMACY.

1. What are the entrance requirements as to age and preliminary education ?
2. How much practical experience in drug stores, if any, is required for graduation ?
3. What was the total attendance in your institution for the year 1905–1906 ?
4. What was the total number of graduates in the same year ?
5. What is the total number of weeks of instruction from matriculation to graduation?
6. What is the total number of hours of obligatory attendance weekly ?
7. What is the total number of hours of obligatory lecture work, of obligatory laboratory work, and of other obligatory school work, if any?

ALABAMA: *Alabama Polytechnic Institute, Department of Pharmacy.*

a. Entrance requirements (age and preliminary education).

No report.

b. Drug store experience required for graduation.

No report.

Medical College of Alabama, Department of Pharmacy.

a. Entrance requirements (age and preliminary education).

No report.

b. Drug store experience required for graduation.

No report.

CALIFORNIA: *California College of Pharmacy, University of California.*

a. Entrance requirements (age and preliminary education).

For the Degree of Pharmaceutical Chemist: Applicants for matriculation must be at least eighteen years old, except in the case of graduates of high schools or of accredited schools, who are admitted irrespective of age.

For the Degree of Bachelor of Pharmacy: Applicants for matriculation must have received a degree in Letters or Science, or have been matriculated in the University, or present a diploma from an accredited high school or other institution, whose *credentials will be accepted for entrance to the Colleges of Letters, Arts or Sciences of the University.* Those who cannot present such credentials are required to take the entrance examinations at Berkeley.

b. Drug store experience required for graduation.

None.

College of Physicians and Surgeons of San Francisco.

a. Entrance requirements (age and preliminary education).

No requirement as to age, but an applicant must be at least 21 years of age at the time of graduation. Preliminary Education: One year of high school or its equivalent.

b. Drug store experience required for graduation.

For the degree of Pharmaceutical Chemist no practical experience is required. For the degree of Doctor of Pharmacy three years of practical experience prior to matriculation.

Southern California University, College of Pharmacy.

a. Entrance requirements (age and preliminary education).

Applicants for matriculation must be at least sixteen years of age, and furnish evidence of their ability to prosecute the work of the course successfully. The preliminary education must be equivalent to that required for entrance into a high school.

b. Drug store experience required for graduation.

Four years.

DISTRICT OF COLUMBIA: *George Washington University, National College of Pharmacy.*

a. Entrance requirements (age and preliminary education).

Certificates showing that the applicant is entitled to enter a high school.

b. Drug store experience required for graduation.

Four years.

Howard University, Pharmaceutic College.

a. Entrance requirements (age and preliminary education).

Eighteen years. High school or equivalent.

b. Drug store experience required for graduation.

Four years.

FLORIDA: *Florida College of Pharmacy.*

a. Entrance requirements (age and preliminary education).

No report.

b. Drug store experience required for graduation.

No report.

GEORGIA: *University of Georgia, School of Pharmacy.*

a. Entrance requirements (age and preliminary education).

"The applicant must be not less than eighteen years of age, and must have been successfully vaccinated."

The applicant should present a certificate from an "accredited school," or stand an examination in the following branches:

English	3 units.
History	1 unit.
Mathematics	2 units.
Latin	1 unit.
Science	1 unit.
Total	8 units.

Until 1907, students may make up as many as three of the above units after admission to the School of Pharmacy. The above units mean only such an amount of education as may be obtained from the usual course of study in the State schools.

b. Drug store experience required for graduation.

None required, some preferred.

Atlanta College of Pharmacy.

a. Entrance requirements (age and preliminary education).

Eighteen years of age, and a good common school education equivalent to the first grade of a high school.

b. Drug store experience required for graduation.

Two years either in a store or in our free dispensary.

Mercer University, School of Pharmacy.

a. Entrance requirements (age and preliminary education).

Must hold certificate from high school or be graduates of recognized colleges, or stand an examination in Latin, mathematics, English, grammar, etc. No age is mentioned in college, but student must be seventeen years at least.

b. Drug store experience required for graduation.

One year is urged, though none is required.

Southern College of Pharmacy.

a. Entrance requirements (age and preliminary education).

Common school education. Certificate of moral character. Not less than 18 years of age.

b. Drug store experience required for graduation.

Candidate must have filled not less than 2,000 physicians' prescriptions in a drug store.

ILLINOIS: *University of Illinois, School of Pharmacy, Chicago College of Pharmacy.*

a. Entrance requirements (age and preliminary education).

Seventeen years of age. Grammar school education (8th grade).

b. Drug store experience required for graduation.

Four years, from which the time spent at college is deducted.

Illinois Medical College, Department of Pharmacy.

a. Entrance requirements (age and preliminary education).

No report.

b. Drug store experience required for graduation.

No report.

Northwestern University, School of Pharmacy.

a. Entrance requirements (age and preliminary education).

For the degree of Graduate in Pharmacy: Age 17 years, one year of high school work, or its full educational equivalent.

For the degree of Pharmaceutical Chemist: Age 17 years, and high school graduation.

b. Drug store experience required for graduation.

None.

INDIANA: *Northern Indiana School of Pharmacy.*

a. Entrance requirements (age and preliminary education).

No report.

b. Drug store experience required for graduation.

No report.

Notre Dame University, Department of Pharmacy.

a. Entrance requirements (age and preliminary education).

For the two-year program: 18 years, and a certificate of admission to a high school or an equivalent examination. For the three-year program: Certificate of credit of two years in a high school of reputable standing, or an equivalent examination.

b. Drug store experience required for graduation.

None.

Purdue University, School of Pharmacy.

a. Entrance requirements (age and preliminary education).

No requirements as to age. One year in a commissioned high school, or an equivalent in some other school, or an examination covering the same studies.

b. Drug store experience required for graduation.

None.

Tri-State College of Pharmacy.

a. Entrance requirements (age and preliminary education).

Entrance requirements fixed by "Rulings of the Indiana State Board of Pharmacy," to which we conform in every particular.

b. Drug store experience required for graduation.

None.

Winona School of Pharmacy.

a. Entrance requirements (age and preliminary education).

Age, 16 years, and one year at high school.

b. Drug store experience required for graduation.

None.

IOWA: *Highland Park College of Pharmacy.*

a. Entrance requirements (age and preliminary education).

Those now (1905) required by the American Conference of Pharmaceutical Faculties, will be our standard for next year, beginning Sept. 4, 1906.

b. Drug store experience required for graduation.

None for Ph. G.; None for Ph. C.; Four years for Ph. M.

University of Iowa, Department of Pharmacy.

a. Entrance requirements (age and preliminary education)

Entrance requirements—Age, 18 years, completion of second year in a high school.

b. Drug store experience required for graduation.

None.

Keokuk College of Pharmacy.

a. Entrance requirements (age and preliminary education).

Creditable certificates of good moral character, signed by at least one druggist and one physician in good standing in the state from which the applicant comes, and a diploma or certificate of graduation from a grammar school, evidence of having passed the matriculation examination of a recognized literary scientific college, or a certificate or successful examination by the faculty of any reputable university, college or high school, or by the state superintendent of public instruction in the following branches: English, Grammar, Arithmetic, Elementary Physics, United States History, Geography.

b. Drug store experience required for graduation.

None.

KANSAS: *University of Kansas, School of Pharmacy.*

a. Entrance requirements (age and preliminary education).

No statement of age required. High school preparation and in addition one year of Latin and one year of Physics, or, practically, one year of high school training.

b. Drug store experience required for graduation.

None.

KENTUCKY: *Louisville College of Pharmacy.*

a. Entrance requirements (age and preliminary education).

Seventeen years of age. One year in a high school.

b. Drug store experience required for graduation.

Four years.

LOUISIANA: *New Orleans College of Pharmacy.*

a. Entrance requirements (age and preliminary education).

Seventeen years old. The student must have completed a grammar schoool course and presented a certificate showing that an examination to the high school has been passed successfully. Otherwise an examination before us in the same branches is required of each applicant.

b. Drug store experience required for graduation.

Four years.

Tulane University of Louisiana, School of Pharmacy.

a. Entrance requirements (age and preliminary education).

No age requirement for entrance. Must present certificate of good moral character, and evidence of preliminary education equal to a high school education.

b. Drug store experience required for graduation.

Two years. Must submit to the dean a satisfactory certificate of at least two years' practical experience under the instruction of a competent pharmacist. Time actually spent in the pharmaceutical laboratory will be credited as experience.

MAINE: *University of Maine, Department of Pharmacy.*

a. Entrance requirements (age and preliminary education).

No requirement as to age. The entrance requirements for *the Two-year Course* are a knowledge of the following branches: Descriptive geometry, arithmetic, English grammar, physiology, United States history and algebra through equations of the first degree.

For *the Four-year Course*, the entrance requirements are the regular 26 points as for the other B. S. course of the university.

b. Drug store experience required for graduation.

None.

MARYLAND: *University of Maryland, Department of Pharmacy.*

a. Entrance requirements (age and preliminary education).

Seventeen years of age.

In order to be admitted without examination, the applicant must present as evidence of possessing sufficient education either the diploma of an academy, college or high school, based upon not less than four years instruction; or, a certificate issued by a State Department of Education, or by a legally authorized State Examining Board, covering the required subjects (see below); or a certificate showing the successful completion of one year's work in an approved high school or its equivalent.

The words "its equivalent" are to be construed as meaning that the applicant must present a certificate covering at least 20 points, apportioned as follows:

English: Including Composition (2 points), and Grammar (2 points.)

History and Civics: 2 points each.

Geography; Commercial and Physical, 2 points.

Mathematics: Including Arithmetic, 3 points, covering fractions, decimals, interest, proportion, square root and cube root; Algebra, 3 points, covering factoring, fractions, and equations to quadratics.

Languages: German, French, Spanish, Latin or Greek, 4 points. Either one or more of these languages may be counted in making up the necessary weekly periods.

With the exception of Arithmetic, Algebra and Languages, any of the branches named may be substituted by Rhetoric (2 points), English Literature (2 points), Plane Geometry (3 points), Solid Geometry (2 points), Trigonometry (2 points), Physiology and Hygiene (2 points), Botany, Biology or Zoology (2 points), Astronomy (1 point), Geology (1 point.

One point signifies 1 weekly period of not less than 45 minutes, during a scholastic year of not less than 36 weeks, or 2 weekly periods during 18 weeks.

An applicant may be admitted to the School of Pharmacy conditionally, provided his credentials meet at least 16 points as assigned to the subjects named above, with the distinct understanding that the conditions, 4 points or less, must be removed by satisfactory examination before he is allowed to enter the Senior Course.

In the absence of a duly authenicated certificate, the applicant will be required to stand an examination in the branches enumerated to the extent of securing the required 20 points.

b. Drug store experience required for graduation.

None.

MASSACHUSETTS: *Massachusetts College of Pharmacy.*

a. Entrance requirements (age and preliminary education).

Seventeen years, and one year in a standard high school or its equivalent.

b. Drug store experience required for graduation.

Four years.

MICHIGAN: *Michigan College of Medicine and Surgery, Department of Pharmacy.*

a. Entrance requirements (age and preliminary education).

High school examination.

b. Drug store experience required for graduation.

None.

Ferris Institute, Department of Pharmacy.

a. Entrance requirements (age and preliminary education).

None.

b. Drug store experience required for graduation.

None.

University of Michigan, School of Pharmacy.

a. Entrance requirements (age and preliminary education).

Sixteen years old, and a graduate of a good high school or its equivalent.

b. Drug store experience required for graduation.

None.

MINNESOTA: *University of Minnesota, College of Pharmacy.*

a. Entrance requirements (age and preliminary education).

Two year Course.—Matriculants of the two-year course for 1906–07 are required to have certificates showing a four-year high school course, or its equivalent, in English, Algebra, Geometry, Physics and Latin, or pass an entrance examination; matriculants for 1907-1908 and 1909 require, in addition, evidence of special preparation in Latin, Greek, German, French, Spanish, English and History and various branches of higher mathematics and natural history.

Students may enter with two one-year conditions or three half-year conditions.

Matriculants for the *three-year course* beginning in 1907 are the same as those for admission to the two-year courses of 1906–07, with the exception that students may carry as conditions not more than three of the entrance subjects, among which English cannot be.

b. Drug store experience required for graduation.

None.

Minnesota Institute of Pharmacy.

a. Entrance requirements (age and preliminary education).

There are no age or educational requirements.

b. Drug store experience required for graduation.

No report.

MISSOURI: *Kansas City College of Pharmacy and Natural Sciences.*

a. Entrance requirements (age and preliminary education).

At least 16 years of age, and one year in a high school or its equivalent.

b. Drug store experience required for graduation.

Four years.

Barnes College of Pharmacy.

a. Entrance requirements (age and preliminary education).

At least 16 years of age; must furnish evidence of ability to prosecute the course of work successfully, and must furnish evidence of having attended school, and passed examination in the elementary English branches and the rudiments of Latin. If, however, the applicant has never studied Latin, he will be required to take the Latin course provided for in this institution free of charge. The applicant must be possessed of a good moral character.

b. Drug store experience required for graduation.

Four years including the two years spent in college.

St. Louis College of Pharmacy.

a. Entrance requirements (age and preliminary education).

An entrance examination in the common school branches, and certificates of having passed school examinations entitling the applicants to enter high schools or colleges.

b. Drug store experience required for graduation.

Four years for Ph. G., none for Ph. B.

NEBRASKA: *Creighton College of Pharmacy.*

a. Entrance requirements (age and preliminary education).

"No one should undertake the study of pharmacy who has not at least a good common school education, or such qualifications as would enable him to enter a good high school. A good high school course is the best preparation for taking up the work. Since the law of the State does not require a certain standard of scholarship for candidates for registration we are left to our judgment in fixing entrance requirements. Some young men who have never had the advantage of a high school course, but who are well grounded in the common branches, do as good work as do some graduates of high schools. We do not desire to deprive any of the privileges of a course in pharmacy simply because they may not have been so fortunately situated as others. The course is a hard one and requires a great deal of determination and stick-to-it-ive ness to master. A knowledge of chemistry, Latin, botany, or physics is not required for entrance." If this paragraph means anything at all, it means no specific entrance requirements.

b. Drug store experience required for graduation.

Two years

NEW JERSEY: *New Jersey College of Pharmacy.*

a. Entrance requirements (ages and preliminary education).

A certificate of graduation from a grammar school, or from a public or private high school; or passing an examination before us in arithmetic, spelling, writing, general history and geography; also, a certificate of preceptor is required.

b. Drug store experience required for graduation.

Four years.

NEW YORK: *Union University, Department of Pharmacy. Albany College of Pharmacy.*

a. Entrance requirements (age and preliminary education).

Age 17 years, and a pharmacy student's certificate issued by the New York State Educational Department, which represents 15 regents counts, and one year's work in an accredited high school, or its equivalent.

b. Drug store experience required for graduation.

None.

Brooklyn College of Pharmacy.

a. Entrance requirements (age and preliminary education).

Age 17 years, and a Pharmacy Student's Certificate.

b. Drug store experience required for graduation.

None.

Buffalo College of Pharmacy.

a. Entrance requirements (age and preliminary education.)

Age 17 years; satisfactory evidence of good moral character, and a Pharmacy Student's Certificate.

b. Drug store experience required for graduation.

None.

Columbia University, Dept. of Pharmacy, (College of Pharmacy of the City of New York.)

a. Entrance requirements (age and preliminary education.)

Age 17 years, and a Pharmacy Student's Certificate.

b. Drug store experience required for graduation.

None.

NORTH CAROLINA: *University of North Carolina, Dept. of Pharmacy.*

a. Entrance requirements (age and preliminary education.)

No report.

b. Drug store experience required for graduation.

No report.

Shaw University (Leonard College of Pharmacy.)

a. Entrance requirements (age and preliminary education.)

20 years of age and a knowledge of the English branches and proficiency in Latin and the sciences.

b. Drug store experience required for graduation.

None.

NORTH DAKOTA: *North Dakota Agricultural College, Department of Pharmacy.*

a. Entrance requirements (age and preliminary education).

For the two-year course: At least fifteen years of age, and completion of first year in a high school or its equivalent.

The requirements *for the four-year course* in pharmaceutical chemistry are the same as to age and for admission to the general science courses in this and other leading institutions. The actual requirements in pharmacy and underlying subjects are the same as in the two years' course. In addition to this there is required the same amount of work in cultural subjects as is found in the general science course.

b. Drug store experience required for graduation.

On completing his college course the student receives a certificate of completion and, at the end of two years' practice in drug-store work he receives the degree of Graduate in Pharmacy—Ph. G. Or, if the student has had previously the equivalent of two years of drug-store practice, the degree may be obtained at the time of graduation.

OHIO: *Cincinnati College of Pharmacy.*

a. Entrance requirements (age and preliminary education).

No report.

b. Drug store experience required for graduation.

No report.

Cleveland School of Pharmacy.

a. Entrance requirements (age and preliminary education).

Seventeen years of age and a certificate showing the completion of one year of a good high school course, preferably in the following subjects: algebra, Latin and natural science, such as zoölogy and physical geography.

b. Drug store experience required for graduation.

None.

Ohio Medical University, College of Pharmacy.

a. Entrance requirements (age and preliminary education).

"A common school education or the equivalent thereof, which shall include one year in a high school of first grade (Ohio), or an academy, legally constituted, providing a course of study of not less than four years." The minimum equivalent must embrace one year of instruction in each of the following branches: Algebra, English, Natural Science and History (United States or general history).

b. Drug store experience required for graduation.

No experience is required for graduation. Four years are required by the Ohio Pharmacy Board to obtain a certificate for registered pharmacist.

Ohio Northern University, College of Pharmacy.

a. Entrance requirements (age and preliminary education).

Our requirements are "first year in a standard high school or its equivalent" for the Ph. G. degree. For the Phar. D. degree, the student must have a diploma from a high school and four years' practical experience before entering.

b. Drug store experience required for graduation.

As the States usually require experience before the applicant can take the examination, we do not make experience essential before entering or graduating, only in the degree as above referred to viz., Phar. D.

Ohio State University, College of Pharmacy.

a. Entrance requirements (age and preliminary education).

Age, 17 years. Preliminary education. For short course, not less than one year of standard high school, first grade. For long course, graduation from standard high school giving four years' instruction.

b. Drug store experience required for graduation.

None.

Scio College of Pharmacy.

a. Entrance requirements (age and preliminary education).

Seventeen years of age. One year in high school for Ph. G., or Ph. C. High school graduation for Pharm. D.

b. Drug store experience required for graduation.

None.

Toledo College of Pharmacy.

a. Entrance requirements (age and preliminary education).

Seventeen years of age, and a common school education, or its equivalent, which shall include one year in a high school.

b. Drug store experience required for graduation.

None.

OKLAHOMA: *University of Oklahoma, School of Pharmacy.*

a. Entrance requirements (age and preliminary education).

Sixteen years of age. Instruction in English (2 units), history and civics (1 unit), algebra (1 unit), botany (1 unit), physics (1 unit), and Latin (1 unit).

b. Drug store experience required for graduation.

Two years.

OREGON: *Oregon Agricultural College, Department of Pharmacy.*

a. Entrance requirements (age and preliminary education).

No report.

b. Drug store experience required for graduation.

No report.

PENNSYLVANIA: *Medico-Chirurgical College of Philadelphia, Dept. of Pharmacy.*

a. Entrance requirements (age and preliminary education).

One year of completed high school work, or equivalent education, certified by an authorized official of the State Department of Education.

b. Drug store experience required for graduation.

Four years.

Philadelphia College of Pharmacy.

a. Entrance requirements (age and preliminary education).

Eighteen years of age and one year in a graded high school or its equivalent.

b. Drug store experience required for graduation.

Four years or its equivalent.

Pittsburgh College of Pharmacy.

a. Entrance requirements (age and preliminary education.)

Age 17, and one year of Education in a standard high school, or its equivalent.

b. Drug store experience required for graduation.

Four years.

The Temple College, Department of Pharmacy.

a. Entrance requirements (age and preliminary education).

Age 17, and one year in a recognized high school or its equivalent.

b. Drug store experience required for graduation.

Four years.

RHODE ISLAND: *Rhode Island College of Pharmacy.*

a. Entrance requirements (age and preliminary education.)

No specific age. A certificate from a high school or reputable preparatory school.

b. Drug store experience required for graduation.

Three years.

SOUTH CAROLINA: *Medical College of the State of South Carolina, Dept. of Pharmacy.*

a. Entrance requirements (age and preliminary education.)

No specific age. A preliminary education satisfactory to the faculty.

b. Drug store experience for required graduation.

Experience in Proper Hospital Dispensary.

SOUTH DAKOTA: *State Agricultural College of South Dakota, Departmeut of Pharmacy.*

a. Entrance requirements (age and preliminary education).

No age requirement. Scholarship requirement same as for admission to the freshman year in any of the college courses, viz., completion of the work of an accredited high school or its equivalent.

b. Drug store experience required for graduation.

None.

TENNESSEE: *University of the South, Pharmacy Department.*

a. Entrance requirements (age and preliminary education).

Seventeen years of age. Must possess a recommendation from two physicians, attesting his fitnesss to enter upon the study, and the education required of a first grade teacher in public schools.

b. Drug store experience required for graduation.

Two years besides laboratory work while in the college.

Walden University, Meharry Pharmaceutical College.

a. Entrance requirements (age and preliminary education).

A good English education and an elementary knowledge of Latin.

b. Drug store experience required for graduation.

None.

University of Tennessee, School of Pharmacy.

a. Entrance requirements (age and preliminary education).

Two courses of instruction are offered: one, extending over two years, leads to the degree of Pharmaceutical Chemist (Ph. C.); and the other, extending over four years, leads to the degree of Bachelor of Science (B. S.).

The requirements for admission to the two-year course are a knowledge of English, grammar, physical geography (or physics, or geology, or agriculture), history of the United States, algebra to quadratics, and two books of plane geometry. For persons who have some knowledge of the drug business, or who are more than 21 years of age, these requirements may be modified.

The requirements for admission to the four-year course are the same as those for the scientific and engineering courses. Students over 21 years of age will be admitted as specials, and may later become regular, and graduate by fulfilling all the requirements.

b. Drug store experience required for graduation.

None.

Vanderbilt University, Department of Pharmacy.

a. Entrance requirements (age and preliminary education).

Age, 17 years, and good moral character.

b. Drug store experience required for graduation.

None.

TEXAS: *Baylor University, College of Medicine and Pharmacy.*

a. Entrance requirements (age and preliminary education).

A certificate of good moral character from a reputable physician, and high school graduation, or its equivalent.

b. Drug store experience required for graduation.

No report.

University of Texas, School of Pharmacy.

a. Entrance requirements (age and preliminary education).

"Candidates are required to be at least 17 years old, and if under 21 years of age to present written evidence of permission to matriculate from parents or guardian."

"Candidates are required to present evidence of having had sufficient preliminary education to undertake the work of the course." Candidates are admitted (a) without examination, and (b) on examination.

b. Drug store experience required for graduation.

None.

Gate City Medical College, School of Pharmacy.

a. Entrance requirements (age and preliminary education).

No report.

b. Drug store experience required for graduation.

No report.

VIRGINIA: *University College of Medicine, Department of Pharmacy.*

a. Entrance requirements (age and preliminary education).

Seventeen years of age. Good moral character. The completion of the common school course and, in addition, at least one year of high school studies.

b. Drug store experience required for graduation.

Four years for the degree of Ph. G., including time spent in college. None for the degree of Ph. B.

Virginia School of Pharmacy.

a. Entrance requirements (age and preliminary education).

Seventeen years of age, and a preliminary education sufficient, in the opinion of the Faculty, to justify the applicant entering on the study of pharmacy. He must present properly-signed certificates as to his character and evidence that he has successfully completed the first year of a registered high school course subsequent to eight years of preacademic preparation, this standard of preliminary education being that required to obtain the registration of the School of Pharmacy by the Board of Regents of New York.

b. Drug store experience required for graduation.

None.

WASHINGTON: *State College of Washington, School of Pharmacy.*

a. Entrance requirements (age and preliminary education).

At least 16 years. For a two-years' course the applicant for admission must have completed the eight grades of the public schools. He must also present 16 semesters' credits from the following list, one of which must be Elementary Latin: 3 credits in Algebra, 2 in Geometry, 1 in Higher Arithmetic, 4 in English, 4 in Latin, 2 in German, 2 in French, 1 in Physical Geography, 1 in Physiology, 1 in Chemistry, 1 in Entomology, 2 in Horticulture, 2 in Agriculture, 2 in Physics, 1 in Wood-work, 1 in Drawing, 1 in U. S. History, 1 in Civics, 1 in English History, 2 in General History, 2 in Book-keeping, A semester is 4½ months' work in one subject, one hour recitation period.

We require the completion of four years' high school work for entrance to the *four-year course*, and graduate with the degree of B. S. in Pharmacy

b. Drug store experience required for graduation.

None.

University of Washington, School of Pharmacy.

a. Entrance requirements (age and preliminary education.)

Age 21 for all *candidates for degrees*, and graduation from an accredited high school (4 years.)

"*Special students* who, by examination, age show themselves capable to carry the course may enter if over 19 years of age."

b. Drug store experience required for graduation.

None.

WISCONSIN: *University of Wisconsin, School of Pharmacy.*

a. Entrance requirements (age and preliminary education.)

Age 18 years, and 1 year in a standard high school.

b. Drug store experience required for graduation.

None.

PHILIPPINE ISLANDS: *Pharmaceutical Faculty, University of St. Thomas.*

a. Entrance requirements (age and preliminary education.)

Fifteen years of age. It is necessary to have a degree of A. B. or a certificate showing that the applicant has passed such examinations as are required for the degree of A. B.

b. Drug store experience required for graduation.

Two-years of practical experience in a drug store.

CANADA: *Manitoba College of Pharmacy.*

a. Entrance requirements (age and preliminary education).

A matriculant must present a Manitoba third class, non-professional teacher's certificate or something higher. This certificate is given on passing a satisfactory examination on courses of study in intermediate and high schools. It ranks somewhat below the full university matriculation, but many of our students possess standing higher than the third class non-professional. Age 21 is demanded for graduation.

b. Drug store experience required for graduation.

Four years.

Laval University, School of Pharmacy.

a. Entrance requirements (age and preliminary education).

A thorough education obtained in a classical college, or a satisfactory examination in French, English, Latin, mathematics, history and geography.

Students that have passed the preliminary examination of the Pharmaceutical Association of this province, which comprises the above subjects, are admitted on producing their certificates.

Students incapable of answering to above requirements are admitted to follow the courses, but cannot compete for the diploma of the school. (School just organized).

b. Drug store experience required for graduation.

Two years.

Montreal College of Pharmacy.

a. Entrance requirements (age and preliminary education).

No report.

b. Drug store experience required for graduation.

No report.

Ontario College of Pharmacy.

a. Entrance requirements (age and preliminary education).

Diploma not granted until 21 years of age, but must have matriculation for University prior to commencing apprenticeship.

b. Drug store experience required for graduation.

Four years prior to entering the College, the Junior term of College counting as a part of the four years' apprenticeship.

The following seven Schools of Pharmacy are reported as non-existent or discontinued:

Austin College of Pharmacy, Effingham, Ill.

Drake University, Department of Pharmacy, Des Moines, Iowa.

Dakota Normal College, Department of Pharmacy, Sioux Falls, S. D.

Chattanooga Medical College, Department of Pharmacy, Chattanooga, Tenn.

Dallas Medical College, Department of Pharmacy, Dallas, Texas.

West Virginia University, Department of Pharmacy, Morgantown, W. Va.

Wisconsin College of Physicians and Surgeons, Dept. of Pharmacy, Milwaukee, Wis.

STATISTICS ON SCHOOLS OF PHARMACY.

Total Attendance 1905–1906.	Total Number of Graduates 1905–1906.	Weeks of Instruction from Matriculation to Graduation.	Hours of Obligatory Work, Weekly.	Total Hours of Obligatory Work. a. Lecture.*	b. Laboratory.	c. Other.
ALABAMA:—*Alabama Polytechnic Institute; Department of Pharmacy.*						
No report.						
Medical College of Alabama; Department of Pharmacy.						
No report.						
CALIFORNIA:—*California College of Pharmacy; University of California.*						
74	Phar. D. 3 Ph. C. 26 } 29	Phar. D. 96 Ph. C. 64	24	Phar. D. 724 Ph. C. 704	Phar. D. 1680 Ph. C. 832	
College of Physicians and Surgeons of San Francisco; Department of Pharmacy.						
18	6	64	24	928	608	
Southern California University; College of Pharmacy.						
No report.						
DISTRICT OF COLUMBIA: *George Washington University; National College of Pharmacy.*						
72	19	93	12	516	600	
Howard University Pharmaceutical College.						
23	1	96	No report.	960	1920	
FLORIDA:—*Florida College of Pharmacy.*						
No report.						
GEORGIA:—*University of Georgia; School of Pharmacy.*						
School temporarily closed because of death of chancellor and illness of dean.						
Atlanta College of Pharmacy.						
153	61	52	33	741	730	
Mercer University; School of Pharmacy.						
36	14	64	25	785	815	

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* Lecture hours include Review and Quiz hours.

STATISTICS ON SCHOOLS OF PHARMACY.—*Continued.*

Total Attendance 1905–1906.	Total Number of Graduates 1905–1906.	Weeks of Instruction from Matriculation to Graduation.	Hours of Obligatory Work, Weekly.	Total Hours of Obligatory Work. a. Lecture.	b. Laboratory.	c. Other.
			Southern College of Pharmacy.			
85	40	50	26	Lecture and Recitation 1000	300	
			ILLINOIS:—*University of Illinois; School of Pharmacy; Chicago College of Pharmacy.*			
173	43	60	From 20 to 23	Lectures and recitation 502	640	
			Illinois Medical College; Department of Pharmacy.			
No report.						
			Northwestern University; School of Pharmacy.			
208	71	Ph. G. 54 Ph. C. 72	30	540 (about)	1100 (about)	
			INDIANA: *Northern Indiana School of Pharmacy.*			
102	75	72	Average 35	Lectures and Recitations 1386	1320	
			Notre Dame University; Department of Pharmacy.			
22	3 yr. course Ph. C. 1 2 yr. course Ph. G. 6	Ph. C. 108 Ph. G. 72	31	Ph. C. 1116 Ph. G. 720	Ph. C. 2232 Ph. G. 1386	
			Purdue University; School of Pharmacy.			
101	34	65	28	817	1025	
			Tri-State College of Pharmacy.			
36	16	Ph. C. 72 Ph. G. 40	37½	Ph. C. 1260 Ph. G. 700	Ph. C. 1440 Ph. G. 800	
			Winona School of Pharmacy.			
95	43	Ph. C. 72 Ph. G. 52	36	Ph. C. 720 Ph. G. 520	Ph. C. 1152 Ph. G. 832	
			IOWA—*Highland Park College of Pharmacy.*			
179	Ph. G. 107 Ph. C. 2 Ph. M, 1	Ph. G. 48 Ph. C. 72 Ph. M. 72	Ph. G. 29 Ph. C. 29 Ph. M. 29	Ph. G. 792 Ph. C. 1188 Ph, M, 1188	Ph. G. 600 Ph. C. 900 Ph. M. 900	

STATISTICS ON SCHOOLS OF PHARMACY.—*Continued.*

Total Attendance 1905–1906.	Total Number of Graduates 1905–1906.	Weeks of Instruction from Matriculation to Graduation.	Hours of Obligatory Work, Weekly.	Total Hours of Obligatory Work.		
				a. Lecture.	b. Laboratory.	c. Other.
University of Iowa; Department of Pharmacy.						
56	21	72	57	Lecture and recitation 810	1288	
Keokuk College of Pharmacy.						
23	11	80	27	720	1440	
KANSAS:—*University of Kansas; School of Pharmacy.*						
64	14	39	No fixed standard.	Lecture and recitation 748	1304	
KENTUCKY:—*Louisville College of Pharmacy.*						
51	12	56	Senior 23 Junior 25	1008	1680	
LOUISIANA:—*New Orleans College of Pharmacy.*						
53	16	56	Senior 24 Junior 20	Lecture and recitation 1568	896	
Tulane University of Louisiana; School of Pharmacy.						
35	17	58	34½	812	1189	
MAINE:—*University of Maine; Department of Pharmacy.*						
18	2	4 yr. course 144 2 yr. course 72	About 28	4 yr. course 102 2 yr. course 41	4 yr. course 88 2 yr. course 66	Military drill. 4 yr. course 10 2 yr. course 10
MARYLAND:—*University of Maryland; Department of Pharmacy; Maryland College of Pharmacy.*						
84	24	62	19.5	Lecture and recitation 558	651	
MASSACHUSETTS:—*Massachusetts College of Pharmacy.*						
200	33	64	32	640	1408	
MICHIGAN:—*Michigan College of Medicine and Surgery; Department of Pharmacy.*						
30	14	64	42	1344	1344	

STATISTICS ON SCHOOLS OF PHARMACY.—*Continued.*

Total Attendance 1905–1906.	Total Number of Graduates 1905–1906.	Weeks of Instruction from Matriculation to Graduation.	Hours of Obligatory Work, Weekly.	Total Hours of Obligatory Work. a. Lecture.	b. Laboratory.	c. Other.
Ferris Institute; Department of Pharmacy.						
117	3	72	25	Lecture and recitation 720	1080	
University of Michigan; School of Pharmacy.						
86	Ph. C., 2 yrs. 14 B. S., 4 yrs. 6	2 yr. course 72 4 yr. course 144	31	702	1542	
MINNESOTA:—*University of Minnesota; College of Pharmacy.*						
80	19	80	40	Lecture and recitation 933	1488	
Minnesota Institute of Pharmacy.						
137	None.	No report.	No report.	No report.	No report.	No report.

With reference to the Minnesota Institute of Pharmacy: this is not a school of the usual type, but a private school for preparing druggists for state board examinations. Consequently, writes its director, Prof. C. W. Drew, "It is impossible for me to answer the questions which you formulate, as many of them have no bearing upon the school and its work. The attendance for 1905-06 was 137. There is no graduation from the school, and there are no age or educational requirements."

Total Attendance 1905–1906.	Total Number of Graduates 1905–1906.	Weeks of Instruction from Matriculation to Graduation.	Hours of Obligatory Work, Weekly.	Total Hours of Obligatory Work. a. Lecture.	b. Laboratory.	c. Other.
MISSOURI:—*Kansas City College of Pharmacy and Natural Sciences.*						
70	19	56	Juniors 18 Seniors 22	504	616	
Barnes College of Pharmacy.						
31	Ph. G. 16 Ph. B. 1	62	Seniors 23 Juniors 22	1488	1364	
St. Louis College of Pharmacy.						
175	64	60	23	540	840	
NEBRASKA:—*Creighton College of Pharmacy.*						
102	36	48	32	696	840	
NEW JERSEY:—*New Jersey College of Pharmacy.*						
65	13	60–62	Juniors 14 Seniors 15	780	600	360

STATISTICS ON SCHOOLS OF PHARMACY—*Continued.*

Total Attendance 1905–1906.	Total Number of Graduates 1905–1906.	Weeks of Instruction from Matriculation to Graduation.	Hours of Obligatory Work, Weekly.	Total Hours of Obligatory Work.		
				a. Lecture.	b. Laboratory.	c. Other,
NEW YORK:—*Union University; Department of Pharmacy (Albany College of Pharmacy).*						
72	36	54	Juniors 19 Seniors 16	Lecture and recitation 351	594	
Brooklyn College of Pharmacy.						
194	131	64	15	Lecture and recitation 650	410	
Buffalo College of Pharmacy.						
118	59	52	15	440	340	
Columbia University; Department of Pharmacy (College of Pharmacy of the City of New York).						
353	Ph. G. 179 Ph. C. 10 Phar. D. 15	56	20	700	420	
NORTH CAROLINA:—*University of North Carolina; Department of Pharmacy.*						
No report.						
Shaw University (Leonard College ot Pharmacy).						
31	13	96	12	No report.	No report.	No report.
NORTH DAKOTA:—*North Dakota Agricultural College; Department of Pharmacy.*						
33	5	72	30	Lecture and recitation 1440	720	
OHIO:—*Cincinnati College of Pharmacy.*						
Data declined						
Cleveland School of Pharmacy.						
66	6	90	1st year 11 2d year 14 3d year 13½	Lecture and recitation 570	585	
Ohio Medical University; College of Pharmacy.						
11	5	68	21	432	816	

STATISTICS ON SCHOOLS OF PHARMACY—*Continued.*

Total Attendance 1905–1906.	Total Number of Graduates 1905–1906.	Weeks of Instruction from Matriculation to Graduation.	Hours of Obligatory Work, Weekly.	Total Hours of Obligatory Work. a. Lecture.	b. Laboratory.	c. Other.
OHIO:—*Ohio Northern University; College of Pharmacy.*						
About 115	None.	52	About 15	About 260	About 520	
Ohio State University; College of Pharmacy.						
56	6	Short Course 72 Long Course 144	24	Short Course 720 Long Course 1440	Short Course 1008 Long Course 2016	
Scio College of Pharmacy.						
50	12	Ph. G. 56 Ph. C. 76 Phar. D. 114	35	Ph. G. 840 Ph. C. 1140 Phar. D. 1910	Ph. G. 1120 Ph. C. 1520 Phar. D. 2280	
Toledo College of Pharmacy.						
25	2	56	35	840	1120	
OKLAHOMA:—*University of Oklahoma; School of Pharmacy.*						
43	12	96	51	1536	3072	*Physical Training.* 288
OREGON:—*Oregon Agricultural College; Department of Pharmacy.*						
70	13	144	22	No report.	No report.	
PENNSYLVANIA:—*Medico-Chirurgical College of Philadelphia; Department of Pharmacy.*						
118	19	62	19½	434	691	
Philadelphia College of Pharmacy.						
485	124	75	17	830	455	
Pittsburg College of Pharmacy.						
196	62	Ph. G. 60 Phar. D. 90	Ph. G. Junior 18½ Ph. G. Senior 20 Phar. D. 20	Ph. G. 705 Phar. D. 720	Ph. G. 450 Phar. D. 1080	
The Temple College; Department of Pharmacy.						
24	11	74	18	600	730	

STATISTICS ON SCHOOLS OF PHARMACY—*Continued.*

Total Attendance. 1905-1906.	Total Number of Graduates 1905-1906.	Weeks of Instruction from Matriculation to Graduation.	Hours of Obligatory Work, Weekly.	Total Hours of Obligatory Work. a. Lecture.	b. Laboratory.	c. Other.
RHODE ISLAND—*Rhode Island College of Pharmacy.*						
57	15	34	14	186	570	
SOUTH CAROLINA—*Medical College of the State of South Carolina; Department of Pharmacy.*						
59	29	56	18	About 250	About 350	
SOUTH DAKOTA—*State Agricultural College of South Dakota; Department of Pharmacy.*						
25	7	72	About 24	Lecture and recitation 864	864	
TENNESSEE—*University of the South; Pharmacy Department.*						
31	11	30	21	320	270	
Walden University; Meharry Pharmaceutical College.						
33	9	78	25	Lecture and recitation 780	1170	
University of Tenneesee; School of Pharmacy.						
7	3	74	21	666	1036	
Vanderbilt University; Department of Pharmacy.						
43	9	72	27	About 700	About 1200	
TEXAS—*Baylor University; College of Medicine and Pharmacy.*						
32	5	54	26	486	918	Recitations—216
University of Texas; School of Pharmacy.						
70	14	64	No report.	No report.	No report.	No report.
Gate City Medical College: School of Pharmacy.						
No report.						
VIRGINIA—*University College of Medicine; Department of Pharmacy.*						
46	11	58	26	Lecture and recitation 522	986	
Virginia School of Pharmacy.						
24	5	60	6 to 10	362	600 to 960	

STATISTICS ON SCHOOLS OF PHARMACY—*Concluded.*

Total Attendance 1905–1906.	Total Number of Graduates 1905–1906.	Weeks of Instruction from Matriculation to Graduation.	Hours of Obligatory Work, Weekly.	Total Hours of Obligatory Work.		
				a. Lecture	b. Laboratory.	c. Other.
WASHINGTON—*State College of Washington ; School of Pharmacy.*						
36	10	Ph. G., 72 B. S. in Pharmacy, 144	20		1440 for Ph. G. 2880 for B. S. in Pharmacy.	
University of Washington; School of Pharmacy.						
50	11	Ph. G. 72 B. S. 144	Ph. G. 60 B. S. 120	Ph. G. 576 B. S. 1296	Ph. G. 1728 B. S. 2592	Ph. G. Gym. 144 B. S. 288
WISCONSIN—*University of Wisconsin ; Course in Pharmacy.*						
31	Ph. G 9 B S. 1	Ph. G. 72	No report.	Lecture and recitation 755	1964	
PHILIPPINES—*University of Saint Thomas ; Pharmaceutical Faculty, Manila, Philippines.*						
28	5	144 (4 sessions of 9 months each)	No report.	1st session 3 hours daily of lectures and laboratory practice 2nd session 4 hours daily of lectures and laboratory practice 3rd session 3 hours daily of lectures and laboratory practice 4th session 2 hours daily (at least)		
CANADA—*Manitoba College of Pharmacy.*						
62	26	About 33	No report.	320	200	
Laval University School of Pharmacy.						
School just organized.						
Montreal College of Pharmacy.						
No report.						
Ontario College of Pharmacy.						
86	77	30	44	600	600	

PHILIPPINE ISLANDS.—Perhaps a word or two should be said concerning the University of St. Thomas of the Philippine Islands situated in Manila This institution was founded (Journal of the American Medical Association 1906, 624), by a papal decree in 1587, and the medical school was added in 1871. The faculty consists of 19 professors. The course extends over a period of six years of nine months each. The first year is a preparatory one, devoted to the teaching of physics, chemistry and biology. The degree of licenciado is conferred at the conclusion of the fifth year, and the degree of doctorado at the end of the sixth year, during which only special work is done This last year is optional, the degree of licenciado entitling the holder to all the rights and privileges of the medical practitioner. The degree is equivalent to the English M B. The Rector of the university is Dr. Fr. Raymundo Vetasquez; the Secretary of the medical department is Lic. Blas C. Alcuaz. The total registration for 1904–05 was 310; given degree of licenciado, 26; given M. D., 11. The course began July 2, 1905, and ended March 6, 1906.

BOARDS OF PHARMACY.

1. What is your opinion regarding the practicability of interchanging state certificates. If practicable, under what conditions should the interchange be made?

2. Please report:

(a) The number of applicants for registration as pharmacists, assistants and apprentices, respectively, in your state in 1905.

(b) The number registered and licensed in each class.

(c) The number examined and the number licensed without examination as graduates of pharmacy.

3. What was the total number of registered and licensed pharmacists (if licensed druggists constitute a separate class from the registered pharmacists, under your law, state the number), registered assistant pharmacists, and registered apprentices in your state on December 31, 1905, or at the date nearest December 31, 1905, on which your records show these totals.

4. What is the total number of drug stores in your state, and what number are run by physicians?

5. What is the total number of physicians in your state, and about what percentage dispense or supply drugs to patients?

ALABAMA.

On plain practical questions, such as occur in every-day life of a retail druggist.

ARIZONA.

I think it would be a very good thing if the standards of all Boards could be such as would permit the interchanging of State certificates.

As to conditions for exchange, I should leave that to the National Association of Boards of Pharmacy, or the decision of all the Boards; any plan so that it would be safe and prevent fraud.

ARKANSAS.

I think it not only practicable, but very desirable.

Interchange should be made under rules formulated by the National Association of Boards of Pharmacy.

CALIFORNIA.

(Did not express an opinion.)

COLORADO.

It is not practicable for us to exchange certificates on account of the many who want to come out here because of impaired health of either themselves or their family, and we would be overcome in a short time. I received last year, from the Eastern States, about 400 letters in which they always stated that they wanted to come out here if we would recognize their home certificates and exchange ours.

CONNECTICUT.

I favor it under strict conditions.

DELAWARE.

(No reply.)

DISTRICT OF COLUMBIA.

(Did not express an opinion.)

FLORIDA.

Should be interchanged under rules of National Association of Boards of Pharmacy.

GEORGIA.

Thoroughly practicable and advisable for right lines; to give conditions of interchange that would suit the laws in all States is not practical. The exchanges should be based on the highest requirements of any two States exchanging, and with such modifications as necessary in some locations to prevent overcrowding with proprietors or with clerks as the case may be.

IDAHO.

We, as a Board, feel that if an applicant is duly qualified to practice, we admit him without examination.

ILLINOIS.

My personal opinion is that the interchange of State certificates is not practicable.

INDIANA.

(No reply.)

INDIAN TERRITORY.

Secretary of one State Board should furnish list of questions and grades made by applicant and general average; then let the Board pass upon the questions and adopt the account given by other Board, and if the general average is above 85, to exchange.

IOWA.

(No reply.)

KANSAS.

Consider interchange impracticable until standard of examination and requirements are similar.

KENTUCKY.

Think practicable, but have never worked out plan.

LOUISIANA.

I think the interchanging of State certificates is practicable, but will only become universal when the members of the State Boards of Pharmacy want it so. What, in my opinion, is wanted to make the interchange of certificates between the State Boards of Pharmacy popular, is more actual practical work in this direction; when the State law permits of an interchange, interchange it should be, but with a single Board. This will do more to bring about satisfactory conditions than proposition on paper. Therefore, I would suggest that when the State law does not prohibit an interchange, each Board of Pharmacy pass such a resolution as has been passed by the Ohio and Louisiana Boards to the effect that "we will interchange certificates with any State Board of Pharmacy that will interchange on terms to be agreed upon by the two Boards." The Louisiana Board of Pharmacy is now interchanging with several State Boards and on the terms proposed by the other Board. If a proposition is made that the Louisiana Board can't or don't care to meet, there is no interchange.

MAINE.

I believe in the interchange of certificates, but under what conditions the interchange should be made I am unable to say, as I have not given the matter much thought.

MARYLAND.

Only under rules formulated by the National Association of Boards of Pharmacy.

MASSACHUSETTS.

Not having had any experience as regards reciprocity, I think the basis of exchange as set forth in Article II of the By-Laws of the National Association of Boards of Pharmacy is very good.

MICHIGAN.

(No reply.)

MINNESOTA.

(Did not express an opinion.)

MISSISSIPPI.

Am thoroughly in accord with the idea. If a Board is appointed, whose duty it shall be to formulate questions for all States, and the dates for examinations to be at all times on the same dates, we will be able to secure uniform examinations. As the matter now stands you must agree with me in saying, a vast number of questions used now-a-days are far from practical, and a like number far from technical.

MISSOURI.

(No report.)

MONTANA.

Am in favor of it, but don't see how it can be done. We have an immense State, the secretary holds but one year and cannot give these matters the attention they deserve, good clerks are scarce, and if our requirements were high we would have none to speak of outside of the cities.

NEBRASKA.

I should like to see interchange of certificaces if there were more of a uniformity in Board examinations. Some of the applicants from other States have demonstrated to me that there are some Boards who are not doing good work.

NEVADA.

Practicable through uniformity in State Board examinations.

NEW HAMPSHIRE.

(No reply.)

NEW JERSEY.

No opinion to express.

NEW MEXICO.

I am in favor of interchange, provided examinations are made uniform, grading uniform, and requirements uniform.

NEW YORK.

In regard to interchanging State certificates would say that it is only a matter of time when this will be universal, as the other states are climbing up to the requirements set by the New York Board.

NORTH CAROLINA.

Only when complete reciprocity can be effected between all the States of the United States.

NORTH DAKOTA.

(No opinion expressed.)

OHIO.

Ultimately there will be a general interchange of certificates of registration among all the States, but the conditions are now unsatisfactory owing to the differences in the State laws, and the varied standards of qualification adopted by State Boards. There should be a National Commission with authority to act in a supervisory character in the matter of uniform standards for all State Boards, and which should labor systematically to secure such changes in the pharmacy laws of all States as would make them relatively uniform.

OKLAHOMA.

I do not see any reason why the interchange of certificate between States is not practicable if based upon uniform qualifications and examinations that reasonably test the applicant's ability. I think the interchange should be made only when the States can agree upon uniform bases of education covering all the pharmacists should know in the practice of his profession. I believe that this can be done only by the Boards of Pharmacy of the different States getting together on the requirements that should be exacted by Colleges of Pharmacy of students who enter the colleges, and also, making the requirements for the courses of study in the colleges uniform in the different states.

OREGON.

I think if a pharmacist has passed a good examination, and has been working in a store all the time, he should not be required to pass another examination if he moves into another State. He should have had, however, a general average of at least 80 per cent.

PENNSYLVANIA.

I think it would be a very desirable thing for those who are registered under the laws of Pennsylvania and desire to locate in other States, but I fear that many more from other States would desire to locate in this State. An equitable law giving the Board discretionary powers to select such State Boards for exchanging certificates as most nearly approach our own standard would be desirable.

RHODE ISLAND.

(No opinion expressed.)

SOUTH CAROLINA.

The idea in general is good. It will be practicable as soon as examinations can be standardized.

SOUTH DAKOTA.

I believe it will be practicable on the plan proposed by the National Association of Boards of Pharmacy.

TENNESSEE.

Practicable by standardization of State Boards of Pharmacy.

TEXAS.

(No reports obtained.)

UTAH.

(No reply.)

VERMONT.

(No opinion expressed.)

VIRGINIA.

Would be very difficult but could be arranged, I think. Would not like to undertake to state the conditions.

WASHINGTON.

(No reply.)

WEST VIRGINIA.

(No reply.)

WISCONSIN.

Our Board is of the opinion that the interchange of State certificates is practicable. We would gladly do this if the conditions of pharmacy and the requirements for examination were more uniform in the various States.

WYOMING.

(No reply.)

STATISTICS OF BOARDS OF PHARMACY.

Applicants in 1905.		Registered in 1905.		Total Number Examined.	Registered without Examination.	Total Number Registered, 12–31–05.		Total Number of Druggists.
Pharmacists.	Assistants.	Pharmacists.	Assistants.			Pharmacists.	Assistants.	
ALABAMA.								
60	No report.	60	No report.	45	15	1274	No report.	No report.
ARIZONA.								
23	None.	17	None.	20	None.	149	3	12 run by M. D. About 75
ARKANSAS.								
68	None.	56	None.	25	31	728	None.	About 780 are physicians. About 1950
CALIFORNIA.								
On account of recent fire unable to give data.								
COLORADO.								
No report.	No report.	126	No report.	98	None.	837	25	350–375
CONNECTICUT.								
108		59		No report.	None.	1003	None.	Not known.
DELAWARE.								
No report.								
DISTRICT OF COLUMBIA.								
32	None.	9	None.	No report.	32	No report.	No report.	200
FLORIDA.								
122	None.	90	None.	20	70	1082	None.	300
GEORGIA.								
178	No report.	130	No report.	No report.	10	1600	None.	About 900
IDAHO.								
440	12	428	12	No report.	No report.	No report.	No report.	About 200-225

STATISTICS OF BOARDS OF PHARMACY—*Continued.*

Applicants in 1905.		Registered in 1905.		Total Number Examined.	Registered Without Examination.	Total Number Registered 12·31-05.		Total Number of Druggists.
Pharmacists.	Assistants.	Pharmacists.	Assistants.			Pharmacists.	Assistants.	
ILLINOIS.								
Both 510 Apprentice applications 693.		246 Apprentice cert. reg. 531.	143	No report.	None.	5150	893	Not known.
INDIANA.								
No report.	No report.	42	26	No report.	No report.	No report.	No report.	No report.
INDIAN TERRITORY.								
915	60	915	60	73	160	No report.	No report.	No report.
IOWA.								
No report.								
KANSAS.								
155	20	110	10	No report.	26	1650	35	No report.
KENTUCKY.								
146	No report.	71	No report.	146	None.	1725	No report.	800
LOUISIANA.								
Both 104 Apprentice applicants 82.		55 Apprentice cert. reg. 82.	27	No report.	None.	882	117	No report.
MAINE.								
141	4	44	4	No report.	No report.	762	62	500
MARYLAND.								
48	18	26	9	66	None.	Both 1246		595
MASSACHUSETTS.								
368	None.	121	None.	368	None.	No report.	None.	1515
MICHIGAN.								
No report.								

STATISTICS OF BOARDS OF PHARMACY—*Continued.*

Applicants in 1905.		Registered in 1905.		Total Number Examined.	Registered Without Examination.	Total Number Registered 12–30–05.		Total Number of Druggists.
Pharmacists.	Assistants.	Pharmacists.	Assistants.			Pharmacists.	Assistants.	
MINNESOTA.								
No report.	No report.	No report.	No report.	No report.	No report.	1544	261	No report.
MISSISSIPPI.								
68	None.	44	None.	68	None.	1230	None.	About 500
MISSOURI.								
No report.								
MONTANA.								
Both 20		14	4	None.	None	248	12	Not known.
NEBRASKA.								
132	None.	89	None.	221	No report.	1577	None.	839
NEVADA.								
108	None.	40	None.	108	2	No report.	None.	Not known.
NEW HAMPSHIRE.								
No report.								
NEW JERSEY.								
Both 467		84	80	No report.	None.	1969	95	Not known.
NEW MEXICO.								
No report.	No report.	27	No report.	No report.	None.	161	No report.	Not known.
NEW YORK.								
444	No report.	341	No report.	No report.	None.	6000	1000	4000
		Apprentice certificates reg. 265						
NORTH CAROLINA.								
87	None.	68	None.	No report.	None.	650	None.	500

STATISTICS OF BOARDS OF PHARMACY—*Continued.*

Applicants in 1905.		Registered in 1905.		Total Number Examined.	Registered Without Examination.	Total Number Registered 12-30-05.		Total Number of Druggists.
Pharmacists.	Assistants.	Pharmacists.	Assistants.			Pharmacists.	Assistants.	
NORTH DAKOTA.								
158	35	55	34	193	39	498	127	About 300
OHIO.								
329	91	No report.	No report.	193	None.	3441	604	2400
OKLAHOMA.								
208	None.	123	None.	125	75	604	None.	445
OREGON.								
Both 170		Both 68		No report.	1	749	160	Not known.
PENNSYLVANIA.								
1578	734	1046	461	2312	None.	No report.	No report.	3000
RHODE ISLAND.								
6	53	3	23	59	None.	319	182	241
SOUTH CAROLINA.								
51	None.	48	None.	7	44	862	None.	Not known.
SOUTH DAKOTA.								
Both 120		60	12	120	None.	About 700	No report.	325
TENNESSEE.								
41	9	28	6	No report.	None.	1154	88	375
TEXAS.								
The law provides for a board of pharmacy in each judicial district, and no reports were obtained.								
UTAH.								
No report.								

STATISTICS OF BOARDS OF PHARMACY—*Concluded.*

Applicants in 1905.		Registered in 1905.		Total. Number Examined.	Registered without Examination.	Total Number Registered, 12-31-05		Total Number of Druggists.
Pharmacists.	Assistants.	Pharmacists.	Assistants.			Pharmacists.	Assistants.	
				VERMONT.				
34	None.	16	None.	34	None.	354	None.	175
				VIRGINIA.				
82	35	24	14	No report.	None.	994	99	Not known.
				WASHINGTON.				
No report.								
				WEST VIRGINIA.				
No report.								
				WISCONSIN.				
214	94	70	76	No report.	None.	1664	452	Not known.
Apprentice applications, 546		Apprentice certificates reg., 546						
				WYOMING.				
No report.								

STATE ASSOCIATIONS.

The following queries were asked:

"What new legislation was proposed, whether passed or not, affecting pharmacy and pharmacists, in your State, during the year from Jan. 1, 1905 to Dec. 31, 1905, that is, laws concerning the registration and license of pharmacists and druggists and their assistants and apprentices, or the sale of poisons, liquors, alcoholic preparations, proprietary preparations, patent medicines, or any other articles used as medicines or containing medicinal substances and customarily sold by druggists? Please send copy of any such laws in your State in 1905, or if this be impracticable give brief synopsis of them."

With but few exceptions no Legislature met during the year (1905) and hence took no action. The exceptions were as follows:

ARKANSAS.

A law regulating the sale of cocaine, passed June 6, 1905.

CALIFORNIA.

No Association.

DISTRICT OF COLUMBIA.

No report.

INDIAN TERRITORY.

The existing pharmacy law was passed by Congress for the Indian Territory, April 28, 1904. The passage of the Statehood bill by Congress will require a new pharmacy law for the State of Oklahoma. This will be done at the first session of the State Legislature.

IOWA.

An act to repeal a section of the existing law relative to the examination of pharmacists and their assistants, and substituting a new section. It becomes operative on October 1, 1906. At the last session of the Legislature a pure food bill was passed, approved February 26, 1906, and placed under the jurisdiction of the State Food and Dairy Commissioner.

KENTUCKY.

Law amended increasing the amount of the annual renewal fee for registered pharmacists from one to two dollars.

LOUISIANA.

A pure food and drug bill was passed. Copy not sent.

MARYLAND.

Pharmacy law amended (1) regarding absence of certified assistant pharmacist, penalty of $25.00 for failure to exhibit certificate; (2) expunging the privilege of physicians who, under the old act, were allowed to conduct pharmacies without registering as pharmacists, and (3) an anti-narcotic law was passed to take effect June 1, 1906.

MASSACHUSETTS.

Laws were passed (1) relating to the sale of intoxicating liquors by registered pharmacists, (2) relating to the interchange of certificates, and (3) a new label law.

MINNESOTA.

The Legislature did not meet this year, but the State Pharmaceutical Association endorsed the following bills and instructed its Committee on Legislation to push their passage: (1) The Prerequisite Bill, (2) the Carbolic Acid Bill, (3) the licensing of peddlers, and (4) restricting the sale of formaldehyde and similar products to the drug trade.

MONTANA.

No legislation. The Montana State Pharmaceutical Association recommended legislation (1) regulating the selection of dispensers of medicine in public institutions, such as the insane asylums, prisons, etc., (2) an anti-narcotic law, (3) various changes of penalties for violations of the State law, and (4) an issue of permits to country merchants for the sale of patent medicines, drugs and preparations along the lines of the Oklahoma law.

NEBRASKA.

Passed March 28, 1905, a cocaine law (House Bill No. 104). No cocaine to be sold except upon the prescription of a physician, the said prescription not to be refilled.

NEW HAMPSHIRE.

An amendment to Section 15 of Chapter 112 of the Public Statutes relating to the better enforcement of the liquor law was passed. Not passed: Act (1) to regulate the sale of Jamaica ginger, (2) to regulate the sale of patent and proprietary medicines, (3) to amend Section 22, Chapter 95, of the Laws of 1903, entitled "An Act to Regulate the Traffic in Intoxicating Liquor," (4) to amend Chapter 95, Law of 1903, relating to the sale of intoxicating liquor, and (5) to amend Sections 2 and 8 of Chapter 135 of the Public Statutes of New Hampshire relating to the sale of drugs and medicines.

NEW JERSEY.

A bill to provide for the manufacture and free distribution of diphtheria antitoxin by the State was introduced into the Legislature, but defeated. Subsequently a substitute bill providing for the purchase and free distribution of diphtheria antitoxin by the State Board of Health was introduced and passed, an appropriation of $5,000 being made. A bill to regulate the sale of drugs and providing for the inspection, analysis and regulation, and an act to regulate the manufacture and sale of patent and proprietary medicines. The bills were very drastic in their provisions, but were defeated by the united opposition of the pharmacists of the State. In one of the bills the Board of Health of the State, and not the State Board of Pharmacy, was empowered to see that the provisions of the act were carried out, the bill being offered and advocated by the physicians of the State and editors of papers and magazines outside of the State. Many of the members of Boards of Health are physicians.

NEW YORK.

The recent New York State Legislature presented 18 bills inimical to the interests of the retail pharmacists, but through the efforts of the legislative committee of the N. Y. S. P. A., they all were killed.

The recent meeting of the N. Y. S. P. went on record as in favor of the Hill-Harowitz law, favoring the restriction of sales of narcotic drugs.

NORTH DAKOTA.

(1) Pure Food Law, amended and re-enacted; (2) Pure Drug Law, passed; (3) Formaldehyde Law, passed; and (4) Paris Green Law, passed.

OHIO.

Passed: Bill to amend Sections 2 and 3 of an act entitled "An Act to provide against the adulterations of foods and drugs," passed March 20, 1884, and Section 3 of said act as amended April 22, 1890, and April 20, 1904. Did not pass: several bills to regulate the manufacture and sale of patent and proprietary medicines.

OKLAHOMA.

In small towns where there is no registered pharmacist located, permits are granted to physicians and to druggists of satisfactory reputation and experience to conduct country drug stores. These permits are granted without examination. Under these permits 105 drug stores are conducted principally by physicians.

Oregon.

No report.

Rhode Island.

No report.

Tennessee.

Passed: An amendment to Section 1 of Pharmacy Law as follows: "the grand jury shall have inquisitorial power to investigate violations of this act, and the circuit and criminal judges shall give law in charge to the grand juries in their respective districts."

Utah.

A bill was introduced into the legislature requiring formula on label of patents containing alcohol and narcotics, but failed to pass.

Virginia.

A bill similar to the Utah bill reported upon above was introduced, but failed to pass.

Washington.

No report.

Wyoming.

No report.

With reference to the data obtained by your Secretary from the Schools of Pharmacy (71 schools replied out of 80), the following summary is of special interest:

Maximum number of students	485
Minimum number of students	7
Maximum number of graduates	204
Minimum number of graduates	2
Maximum weeks of instruction	144
Minimum weeks of instruction	27
Maximum hours of lecture work	1910
Minimum hours of lecture work	186
Maximum hours of laboratory work	3072
Minimum hours of laboratory work	121½

Exceeding care should be used in drawing deductions from these figures. From the very varied *quantity* of instruction given at the different schools, it is reasonable to believe that the *quality* varies equally as well, and that any conclusions that are based solely *upon the number of hours* of instruction must be misleading, and will be, until there are more uniform methods of teaching, both in quality and quantity. In other words, it is apparently necessary to subject the instruction of the American pharmaceutical schools to careful qualitative and quantitative analyses, and standardize the conditions of teaching. Until this is done, a school teaching a few hours, comparatively, may be giving a higher grade of instruction, and really more of value, than another school teaching many more hours. The value of the teaching depends upon the kind and number of branches of instruction taught, their proper "balancing" in the curricula, according to relative values, and the judgment or teaching-skill employed in training the students.

In a few instances, there seems to have been a misunderstanding of some of the questions asked, and your Secretary would suggest that "proofs" of this paper be sent to all the parties affected, with a request to carefully examine the figures, and correct, if necessary. He would suggest, also, that the work of collecting these data be continued in the future, and to facilitate the work, he would recommend that standard blank forms be printed and sent out for answers.

Concerning future questions on "Entrance Requirements," and "Drug Store Experience, etc.," it would be well to supplement these with a question on "Requirements for Graduation."

More important than these, however, should be the collection of information upon the *quality* of instruction given. This is an exceedingly delicate question to handle, but it is not impossible of solution if the parties at interest meet together in a spirit of mutual good will and mutual helpfulness. The logical body to do this work would be the American Conterence of Teaching Faculties.

Concerning the State Boards of Pharmacy, only 39 replies were received out of 50, despite repeated letters. The reports are, in many cases, very meager in information. Apparently, detailed records, regarding the work of the State Boards, are not generally kept.

The opinions expressed upon the practicability of interchanging State certificates, generally unite in saying that such an exchange is desirable, and probably practicable. The methods of exchange proposed, however, are quite variable. Probably the most comprehensive one is that of the Secretary of the Ohio Board of Pharmacy, W. R. Ogier, who urges a standardization of the work of the State Boards by a National Commission with authority to act in a supervisory character in the matter of uniform standards for all State Boards, and which should labor systematically to secure such changes in the pharmacy laws of all the States as would make them relatively uniform.

If there is not greater activity by the State Boards of Pharmacy, generally, with reference to enforcing the Section on Adulteration in the State laws, it is more than probable that this work will be generally transferred to the State Boards of Health, as has been done in Indiana and other States.

Your Secretary would suggest the use of standard printed forms for collecting the data on the State Board work in the future.

Regarding the State Pharmaceutical Associations, 39 reported out of 44. The reports indicate commendable activity on the part of the legislative committees of the different Associations. The necessity of amending many State pharmacy laws, to make them conform to the new Pure Food and Drug Law, is here suggested.

In conclusion, your Secretary would herewith attach, for reference, a copy of the New Pure Food and Drug Law (Public, No. 384), which goes into effect on January 1, 1907; and also, a copy of the new law providing for tax-free denatured alcohol for use in the arts and industries, but not in the manufacture of beverages or *liquid* medicines, which goes into effect in January 1, 1907.

The former law is of particular interest to the drug trade by reason of its provisions against the adulteration and misbranding of drugs. The latter law has been generally regarded as of no special value to the drug trade, save to permit the selling of denatured alcohol for fuel purposes, but a careful reading of the act shows that under the provisions it should be possible to use denatured alcohol, not only for the manufacture of certain *solid* medicinal material, but also, for the manufacture of certain *liquid* chemicals and other materials unfit for use as beverages, that is, if the Commissioner of Internal Revenue and the Secretary of the Treasury exercise their legal prerogative of allowing the use of denaturing agents other than pyridine and wood alcohol. Thus, ether could be used as a denaturing agent for alcohol intended to be employed for the manufacture of ether and oleoresins, and the crystallization of certain chemicals, and chloroform for denaturing alcohol intended for the manufacture of chloroform and the crystallization of certain chemical compounds, and doubtless other illustrations could be found.

THE PURE FOOD AND DRUG LAW.

AN ACT

For preventing the manufacture, sale or transportation of adulterated or misbranded or poisonous or deleterious foods, drugs, medicines and liquors, and for regulating traffic therein, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful for any person to manufacture within any Territory or the District of Columbia any article of food or drug which is adulterated or misbranded, within the meaning of this Act: and any person who shall violate any of the provisions of this section shall be guilty of a misdemeanor, and for each offense shall, upon conviction thereof, be fined not to exceed five hundred dollars or shall be sentenced to one year's imprisonment, or both, such fine and imprisonment in the discretion of the court, and for each subsequent offense and conviction thereof shall be fined not less than one thousand dollars, or sentenced to one year's imprisonment, or both, such fine and imprisonment in the discretion of the court.

SEC. 2. That the introduction into any State or Territory or the District of Columbia from any other State or Territory or the District of Columbia, or from any foreign country, or shipment to any foreign country of any article of food or drugs which is adulterated or misbranded, within the meaning of this Act, is hereby prohibited; and any person who shall ship or deliver for shipment from any State or Territory or the District of Columbia to any other State or Territory or the District of Columbia, or to a foreign country, or who shall receive in any State or Territory or the District of Columbia from any other State or Territory or the District of Columbia, or foreign country, and having so received, shall deliver in original unbroken packages, for pay or otherwise, or offer to deliver to any other person, any such article so adulterated or misbranded within the meaning of this Act, or any person who shall sell or offer for sale in the District of Columbia or the Territories of the United States any such adulterated or misbranded foods or drugs, or export or offer to export the same to any foreign country, shall be guilty of a misdemeanor, and for such offense be fined not exceeding two hundred dollars for the first offense, and upon conviction for each subsequent offense not exceeding three hundred dollars or be imprisoned not exceeding one year, or both, in the discretion of the court: *Provided*, That no article shall be deemed misbranded or adulterated within the provisions of this Act when intended for export to any foreign country and prepared or packed according to the specifications or directions of the foreign purchaser when no substance is used in the preparation or packing thereof in conflict with the laws of the foreign country to which the said article is intended to be shipped; but if said article shall be in fact sold or offered for sale for domestic use or consumption, then this proviso shall not exempt said article from the operation of any of the other provisions of this Act.

SEC. 3. That the Secretary of the Treasury, the Secretary of Agriculture, and the Secretary of Commerce and Labor shall make uniform rules and regulations for carrying out the provisions of this Act, including the collection and examination of specimens of foods and drugs manufactured or offered for sale in the District of Columbia, or in any Territory of the United States, or which shall be offered for sale in unbroken packages in any State other than that in which they shall have been respectively manufactured or produced, or which shall be received from any foreign country, or intended for shipment to any foreign country, or which may be submitted for examination by the chief health, food, or drug officer of any State, Territory, or the District of Columbia, or at any domestic or foreign port through which such product is offered for inter-state commerce, or for export or import between the United States or any foreign port or country.

SEC. 4. That the examinations of specimens of foods and drugs shall be made in the Bureau of Chemistry of the Department of Agriculture, or under the direction and supervision of such Bureau, for the purpose of determining from such examinations whether such articles are adulterated or misbranded within the meaning of this Act; and if it shall appear from any such examination that any of such specimens is adulterated or misbranded within the meaning of this Act, the Secretary of Agriculture shall cause notice thereof to be given to the party from whom such sample was obtained. Any party so notified shall be given an opportunity to be heard, under such rules and regulations as may be prescribed as aforesaid, and if it appears that any of the provisions of this Act have been violated by such party, then the Secretary of Agriculture shall at once certify the facts to the proper United States district attorney, with a copy of the results of the analysis or the examination of such article duly authenticated by the analyst or officer making such examination, under the oath of such officer. After judgment of the court, notice shall be given by publication in such manner as may be prescribed by the rules and regulations aforesaid.

SEC. 5. That it shall be the duty of each district attorney to whom the Secretary of Agriculture shall report any violation of this Act, or to whom any health or food or drug officer or agent of any State, Territory, or the District of Columbia shall present satisfactory evidence of any such violation, to cause appropriate proceedings to be commenced and prosecuted in the proper courts of the United States, without delay, for the enforcement of the penalties as in such case herein provided.

SEC. 6. That the term "drug," as used in this Act, shall include all medicines and preparations recognized in the United States Pharmacopœia or National Formulary, for internal or external use, and any substance or mixture of substances intended to be used for the cure, mitigation, or prevention of disease of either man or other animals. The term "food," as used herein, shall include all articles used for food, drink, confectionery, or condiment by man or other animals, whether simple, mixed, or compound.

Sec. 7. That for the purposes of this Act an article shall be deemed to be adulterated:

In cases of drugs:

First. If, when a drug is sold under or by a name recognized in the United States Pharmacopœia or National Formulary, it differs from the standard of strength, quality, or purity, as determined by the test laid down in the United States Pharmacopœia or National Formulary official at the time of investigation: *Provided*, That no drug defined in the United States Pharmacopœia or National Formulary be deemed to be adulterated under this provision if the standard of strength, quality, or purity be plainly stated upon the bottle, box, or other container thereof, although the standard may differ from that determined by the test laid down in the United States Pharmacopœia or National Formulary.

Second. If its strength or purity fall below the professed standard or quality under which it is sold.

In the case of confectionery;

If it contain terra alba, barytes, talc, chrome yellow, or other mineral substance or poisonous color or flavor, or other ingredient deleterious or detrimental to health, or any vinous, malt or spirituous liquor or compound or narcotic drug.

In the case of food:

First. If any substance has been mixed and packed with it so as to reduce or lower or injuriously affect its quality or strength.

Second. If any substance has been substituted wholly or in part for the article.

Third. If any valuable constituent of the article has been wholly or in part abstracted.

Fourth. If it be mixed, colored, powdered, coated, or stained in a manner whereby damage or inferiority is concealed.

Fifth. If it contain any added poisonous or other added deleterious ingredient which may render such article injurious to health: *Provided*, That when in the preparation of food products for shipment they are preserved by any external application applied in such manner that the preservative is necessarily removed mechanically, or by maceration in water, or otherwise, and directions for the removal of said preservative shall be printed on the covering or the package, the provisions of this Act shall be construed as applying only when said products are ready for consumption.

Sixth. If it consists in whole or in part of a filthy, decomposed, or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not, or if it is the product of a diseased animal, or one that has died otherwise than by slaughter.

Sec. 8. That the term "misbranded," as used herein, shall apply to all drugs, or articles of food, or articles which enter into the composition of food, the package or label of which shall bear any statement, design, or device regarding such article, or the ingredients or substances contained therein which shall be false or misleading in any particular, and to any food or drug product which is falsely branded as to the State, Territory, or country in which it is manufactured or produced.

That for the purposes of this Act an article shall also be deemed to be misbranded:

In case of drugs:

First. If it be an imitation of or offered for sale under the name of another article.

Second. If the contents of the package as originally put up shall have been removed, in whole or in part, and other contents shall have been placed in such package, or if the package fail to bear a statement on the label of the quantity or proportion of any alcohol, morphine, opium, cocaine, heroin, alpha- or beta-eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilide, or any derivative or preparation of any such substances contained therein.

In the case of food:

First. If it be an imitation of or offered for sale under the distinctive name of another article.

Second. If it be labeled or branded so as to deceive or mislead the purchaser, or purport to be a foreign product when not so, or if the contents of the package as originally put up shall have been removed in whole or in part and other contents shall have been placed in such package, or if it fail to bear a statement on the label of the quantity or proportion of any morphine, opium, cocaine, heroin, alpha- or beta-eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilide, or any derivative or preparation of any of such substances contained therein.

Third. If in package form, and the contents are stated in terms of weight or measure, they are not plainly and correctly stated on the outside of the package.

Fourth. If the package containing it or its label shall bear any statement, design, or device regarding the ingredients or the substances contained therein, which statement, design, or device shall be false or misleading in any particular: *Provided*, That an article of food which does not contain any added poisonous or deleterious ingredients shall not be deemed to be adulterated or misbranded in the following cases:

First. In the case of mixtures or compounds which may be now or from time to time hereafter known as articles of food, under their own distinctive names, and not an imitation of or offered for sale under the distinctive name of another article, if the name be accompanied on the same label or brand with a statement of the place where said article has been manufactured or produced.

Second. In the case of articles labeled, branded, or tagged so as to plainly indicate that they are compounds, imitations, or blends, and the word "compound," "imitation," or "blend," as the case may be, is plainly stated on the package in which it is offered for sale: *Provided*, That the term blend as used herein shall be construed to mean a mixture of like substances, not excluding harmless coloring or flavoring ingredients used for the purpose of coloring and flavoring only: *And provided further*, That nothing in this Act shall be construed as requiring or compelling proprietors or manufacturers of proprietary foods which contain no unwholesome added ingredient to disclose their trade formulas, except in so far as the provisions of this Act may require to secure freedom from adulteration or misbranding.

SEC. 9. That no dealer shall be prosecuted under the provisions of this Act when he can establish a guaranty signed by the wholesaler, jobber, manufacturer, or other party residing in the United States, from whom he purchases such articles, to the effect that the same is not adulterated or misbranded within the meaning of this Act, designating it. Said guaranty, to afford protection, shall contain the name and address of the party or parties making the sale of such articles to such dealer, and in such case said party or parties shall be amenable to the prosecutions, fines and other penalties which would attach, in due course, to the dealer under the provisions of this Act.

SEC. 10. That any article of food, drug, or liquor that is adulterated or misbranded within the meaning of this Act, and is being transported from one State, Territory, District, or insular possession to another for sale, or, having been transported, remains unloaded, unsold, or in original unbroken packages, or if it be sold or offered for sale in the District of Columbia or the Territories, or insular possessions of the United States, or if it be imported from a foreign country for sale, or if it is intended for export to a foreign country, shall be liable to be proceeded against in any district court of the United States within the district where the same is found, and seized for confiscation by a process of libel for condemnation. And if such article is condemned as being adulterated or misbranded, or of a poisonous or deleterious character, within the meaning of this Act, the same shall be disposed of by destruction or sale, as the said court may direct, and the proceeds thereof, if sold, less the legal costs and charges, shall be paid into the Treasury of the United States, but such goods shall not be sold in any jurisdiction contrary to the provisions of this Act or the laws of that jurisdiction: *Provided, however*, That upon the payment of the costs of such libel proceedings and the execution and delivery of a good and sufficient bond to the effect that such articles shall not be sold or otherwise disposed of contrary to the provisions of this Act, or the laws of any State, Territory, District, or insular possession, the court may by order direct that such articles be delivered to the owner thereof. The proceedings of such libel cases shall conform, as near as may be, to the proceedings in admiralty, except that either party may demand trial by jury of any issue of fact joined in any such case, and all such proceedings shall be at the suit of and in the name of the United States.

SEC. 11. The Secretary of the Treasury shall deliver to the Secretary of Agriculture, upon his request from time to time, samples of foods and drugs which are being imported into the United States or offered for import, giving notice thereof to the owner or consignee, who may appear before the Secretary of Agriculture, and have the right to introduce testimony, and if it appear from the examination of such samples that any article of food or drug offered to be imported into the United States is adulterated or misbranded within the meaning of this Act, or is otherwise dangerous to the health of the people of the United States, or is of a kind forbidden entry into, or forbidden to be sold or restricted in sale in the country in which it is made or from which it is exported, or is otherwise falsely labeled in any respect, the said article shall be refused admission, and the Secretary of the Treasury shall refuse delivery to the consignee and shall cause the destruction of any goods refused delivery which shall not be exported by the consignee within three months from the date of notice of such refusal under such regulations as the Secretary of the Treasury may prescribe: *Provided*, That the Secretary of the Treasury may deliver to the consignee such goods pending examination and decision in the matter on execution of a penal bond for the amount of the full invoice value of such goods, together with the duty thereon, and on refusal to return such goods for any cause to the custody of the Secretary of the Treasury, when demanded, for the purpose of excluding them from the country, or for any other purpose, said consignee shall forfeit the full amount of the bond: *And provided further*, That all charges for storage, cartage, and labor on goods which are refused admission or delivery shall be paid by the owner or consignee, and in default of such payment shall constitute a lien against any future importation made by such owner or consignee.

SEC. 12. That the term "Territory" as used in this Act shall include the insular possessions of the United States. The word "person" as used in this Act shall be construed to import both the plural and the singular, as the case demands, and shall include corporations, companies, societies and associations. When construing and enforcing the provisions of this Act, the act, omission, or failure of any officer, agent, or other person acting for or employed by any corporation, company, society, or association, within the scope of his employment or office, shall in every case be also deemed to be the act, omission, or failure of such corporation, company, society, or association as well as that of the person.

SEC. 13. That this Act shall be in force and effect from and after the first day of January, nineteen hundred and seven.

Approved, June 30, 1906.

THE "FREE ALCOHOL" LAW.

An Act

For the withdrawal from bond, tax free, of domestic alcohol when rendered unfit for beverage or liquid medicinal uses by mixture with suitable denaturing materials.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That from and after January 1st, 1907, domestic alcohol of such degree of proof as may be prescribed by the Commissioner of Internal Revenue, and approved by the Secretary of the Treasury, may be withdrawn from bond without the payment of internal revenue tax, for use in the arts and industries, and for fuel, light, and power, provided said alcohol shall have been mixed in the presence, and under the direction, of an authorized government officer, after withdrawal from the distillery warehouse, with methyl alcohol or other denaturing material or materials, or admixture of the same, suitable to the use for which the alcohol is withdrawn, but which destroys its character as a beverage and renders it unfit for liquid medicinal purposes; such denaturing to be done upon the application of any registered distillery, in denaturing bonded warehouses specially designated or set apart for denaturing purposes only, and under conditions prescribed by the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury.

The character and quantity of the said denaturing material and the conditions upon which said alcohol may be withdrawn free of tax shall be prescribed by the Commissioner of Internal Revenue, who shall, with the approval of the Secretary of the Treasury, make all necessary regulations for carrying into effect the provisions of this act.

Distillers, manufacturers, dealers and all other persons furnishing, handling or using alcohol withdrawn from bond under the provisions of this Act shall keep such books and records, execute such bonds and render such returns as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, may by regulation require. Such books and records shall be open at all times to the inspection of any internal revenue officer or agent.

Sec. 2. That any person who withdraws alcohol free of tax under the provisions of this act and regulation made in pursuance thereof, and who removes or conceals the same, or is concerned in removing, depositing or concealing the same for the purpose of preventing the same from being denatured under governmental supervision, and any person who uses alcohol withdrawn from bond under the provisions of section one of this act for manufacturing any beverage or liquid medicinal preparations, or knowingly sells any beverage or liquid medicinal preparation made in whole or in part from such alcohol, or knowingly violates any of the provisions of this act, or who shall recover or attempt to recover by redistillation or by any other process or means, any alcohol rendered unfit for beverage or liquid medicinal purposes under the provisions of this Act, or who knowingly uses, sells, conceals or otherwise disposes of alcohol so recovered or redistilled, shall on conviction of each offense be fined not more than $5,000, or be imprisoned not more than five years, or both, and shall, in addition, forfeit to the United States all personal property used in connection with his business, together with the buildings and lots or parcels of ground constituting the premises on which said unlawful acts are performed or permitted to be performed: *Provided*, That manufacturers employing processes in which alcohol used free of tax under the provisions of this Act, is expressed or evaporated from the articles manufactured, shall be permitted to recover such alcohol and to have such alcohol restored to a condition suitable solely for re-use in manufacturing processes under such regulations as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, shall prescribe.

Sec. 3. That, for the employment of such additional force of chemists, internal revenue agents, inspectors, deputy collectors, clerks, laborers, and other assistants as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, may deem proper and necessary to the prompt and efficient operation and enforcement of this law, and for the purchase of locks, seals, weighing beams, gauging instruments, and for all necessary expenses incident to the proper execution of this law, the sum of $250,000, or so much thereof as may be required, is hereby appropriated out of any money in the treasury not otherwise appropriated, said appropriation to be immediately available.

For a period of two years from and after the passage of this Act the force authorized by this section of this Act shall be appointed by the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, and without compliance with the conditions prescribed by the Act entitled "An Act to regulate and improve the civil service," approved January 16th, 1883, and amendments thereof, and with such compensation as the Commissioner of Internal Revenue may fix, with the approval of the Secretary of the Treasury.

Sec. 4. That the Secretary of the Treasury shall make full report to Congress at its next session of all appointments made under the provisions of this Act, and the compensation paid thereunder, and of all regulations prescribed under the provisions hereof, and shall further report what, if any, additional legislation is necessary, in his opinion, to fully safeguard the revenue and to secure a proper enforcement of this Act.

Respectfully submitted, Joseph W. England, *Secretary.*

Mr. Whelpley inquired whether the report of Prof. Scoville on colleges of pharmacy, referred to in the report of the Secretary, had been revised to date, or whether it simply included what appeared in the "Pharmaceutical Review." Upon being answered by Mr. England that it was simply what appeared in the Review, as he had written to Mr. Scoville and could not get a reply, Mr. Whelpley stated that the matter in that article was prepared three years ago, and was not fully up to date at the time, and moved that the report of the Secretary be received, with the understanding that this matter be left out in publishing the Proceedings, as not being up to date.

Mr. Lowe, of Philadelphia, seconded this motion, and called attention to the vast amount of work done by Mr. England in preparing this report, and moved a vote of thanks to him. Mr. Whelpley said he would be glad to have this made a part of his motion.

Mr. Hallberg raised the question as to whether it was customary to give a vote of thanks to the officers of a Section before retirement from office, and thought he detected in this motion an effort on the part of one citizen of the City of Brotherly Love to compliment another. Mr. Remington thereupon promptly moved to include the "gentleman from Chicago" (the Chairman) in this motion, stating that he was about to rise to make such motion when Mr. Hallberg got the floor.

And the motion was so put, and carried unanimously.

Mr. Whelpley called attention to the fact that the report of the Secretary contained a recommendation that certain portions of it be referred to the colleges of pharmacy before publishing in the Proceedings, and expressed doubt whether it would be practicable to do this, as it might interfere with the publication of the Proceedings. His idea was that this work should be taken up by the new officers of the Section, so that an up-to-date report might be gotten up next year.

The General Secretary said the same thought had occurred to him, as to the possibility of causing delay in getting out the Proceedings, when Mr. England had stated that some of the matter contained in his report would have to be proof-read by the proper authorities. He asked whether there were many or few to whom it would have to be sent. Mr. England replied only a few, and added that there was some obvious misunderstanding of the questions presented. He said the report was in shape with this exception. The General Secretary thought that, in this event, it would not cause a delay of more than a week or two, and it might be a good plan; he could send this matter out immediately upon his return to Baltimore. He suggested that the general session be asked to allow the printing of five hundred copies of this elaborate report in pamphlet form, to be sent out to the various colleges and Boards of Pharmacy, as being more convenient for reference in that form than in the Proceedings, which are only accessible to members, and as matter that would be exceedingly valuable for reference purposes to State Boards, libraries and others. Mr. Whelpley seconded this motion. The Chair stated that his own personal experience and observation in the last six months went to show that such information would be both extremely welcome and valuable to the schools and Boards of Pharmacy.

The motion was so put and carried, without dissent.

Mr. Whelpley quoted the following clause from the Chairman's Address, and said that the statement was not quite exact, as there were cases where students were held back after having their drug-store experience, on account of failure to pass the examination required in addition to completing their drug-store experience, and he would like to see the report corrected in that respect:

> "No college requiring drug store experience for graduation has ever refused to confer its diploma upon any student who finished his college course first and had all his drug store experience afterwards as soon as he could show that he had had it."

The Chairman said that of course the statement was made with the understanding that all other conditions for graduation had been complied with, and that the student had not yet completed his course until he had passed his examination; but he said he had no objection to the correction suggested.

Mr. Lowe took occasion to say that at least one of the colleges mentioned as having dispensed with practical drug-store experience did it, not because it thought it was a wise thing to do, but on account of competition with a neighboring school. The Chairman replied that he had not inquired into motives, but merely into actual facts.

The Chair stated that the several propositions which had been formulated and published in the printed program for action by the Joint Conference of Boards and Faculties of Pharmacy on Thursday afternoon would now be taken up and discussed by the Section. He explained that whatever this Association had to say on these propositions, while not necessarily binding on the Joint Conference, would have decided influence there.

The Secretary then read the first proposition:

> 1st. All laws and regulations governing the licensing of pharmacists should make due distinction between apprentices, clerks and principals, and should establish definite minimum qualifications and indicate the rights and duties of each of these three classes of pharmaceutical workers.

Mr. Wulling, of Minneapolis, stated that as Chairman of the Northwestern Branch of the American Pharmaceutical Association, at a recent meeting he had been instructed to recommend to the Joint Conference the adoption of this first proposition, and he moved its adoption by the Section accordingly. This motion was seconded by Mr. G. C. Diekman, of New York, and adopted.

At request of the Chair, the Secretary read the second proposition—first explaining that these propositions could be found on page 236 of the *Bulletin* for August, as well as on the printed programs:

2d. The age of seventeen years and a preliminary general education of one year's satisfactorily completed high school work, or its educational equivalent, should be the minimum prerequisites to the practical pharmaceutical experience or apprenticeship demanded by the laws, and no drug store experience acquired at an earlier age or before the attainment of the preliminary education prescribed should be accepted as sufficiently effective to satisfy the intent of the law.

Action upon the proposition was called for, and Mr. Lowe, of Philadelphia, expressed himself as in favor of part of the proposition and not in favor of the other part. He did not believe that the bright boy or girl should be discriminated against in favor of the dull one. He was decidedly against the age-requirement of seventeen years. The Chairman could see no objection to this, as it was only making the bright boy the better prepared, and as, under the fourth proposition, he would have to wait until he was twenty-one anyhow, before he could become an assistant, and still longer to become a full registered pharmacist.

As bearing upon this subject of preliminary education, the Chair stated that Mr. O. A. Wall, of St. Louis, had a paper that he might present now. Mr. Wall thereupon read the following:

PHARMACEUTICAL EDUCATION AND LEGISLATION.

BY OTTO AUGUSTUS WALL, PH. G., M. D.

Before considering the proposed requirement of one or more years' attendance at a high school as a requisite for admission to a college of pharmacy it may be well to say a few words in regard to pharmaceutical legislation in the past.

American pharmacy was recognized as being the most advanced pharmacy even before we had any pharmacy laws at all, and the members of the craft were competent and safe men then.

While it is often asserted that our pharmacy laws are for the protection of the public against incompetent pharmacists, those of us who are familiar with the history of such legislation are aware that there were no more accidents from incompetence or carelessness then than now; that the public never at any time or in any State demanded such protection, but that wherever such laws were enacted this was done in response to agitation on the part of the pharmacists themselves, led by trades-unionistic motives to limit competition, and that the latter fact has been admitted in the pharmaceutical journals. This is also the real motive for the present agitation to still further limit the number of drug clerks and proprietors of stores, the plea for the protection of the public being a subterfuge necessary to obtain favorable legislation.

As a matter of fact there never was such a condition of pharmacy as to make it necessary to invoke the passage of protective laws for the public against the pharmacists.

To a certain extent the passage of these laws was favored by some colleges in the hope that it would lead to increased numbers of students. While I have my doubts whether the laws really had this effect in the past, there can be no doubt that recent legislation now makes these laws boomerangs that threaten to destroy the colleges. These laws are here, and those who believe in a parental government may see some good in them, but to me pharmacy appears to be in the predicament of the wizard of old, who conjured up the demons of evil to work his nefarious designs. After burning his incense, wafting his wand and invoking Beëlzebub, the evil spirits made their appearance from every quarter of the earth and air; but the wizard had forgotten the formula for exorcism and he was not able to remand them back to hell, and so they overwhelmed and destroyed him. Just so pharmacists have invoked the makers of laws, until the latter in our national and state law-making bodies have come to believe that the majority of pharmacists are dishonest and incompetent, and pharmacy has to suffer the consequences, whether in the form of special war taxes or the annoyances of legislation in regard to the liquor question, the pure food and drug law or in requirements regulating pharmacists with legislative enactments.

The enactment of laws to compel students to have attended high schools, either for a year or two or for four years, with the object of obtaining a high school diploma, as is conceded to be the ultimate object of this agitation, is unfair to a very large proportion of the young men of our country who live where there are no high schools or who are unable, for any reason whatever, to make use of them even if they exist in their home towns. The two branches of a high school course of most direct bearing on pharmacy are algebra and Latin; but arithmetic is not taught in high schools, and most of our students are weak in this. If we consider it necessary for pharmacists to know Latin, arithmetic and algebra, these should be taught in colleges of pharmacy. The time for these studies could easily be obtained in any college of pharmacy by dropping some of the useless studies and making the whole scheme of pharmaceutical education more practical and of more direct bearing on the post-graduate life and needs of the graduates. It seems to me that the advancement of pharmaceutical education lies in the elimination of irrelevant and useless subjects from the courses of study and in concentration of effort on practical essentials rather than in amplification of purely academic and theoretical work in advanced botany and chemistry, which now constitutes so large a proportion of the required work in some of our colleges of pharmacy.

"QUEM JUPITER VULT PERDERE, PRIUS DEMENTAT."

(Whom God would destroy, he first makes mad.)

Pharmacy is essentially a business, with a slight admixture of professionalism; pharmacy at best is scarcely more than semi-professional. The present effort of some pharmacists to take themselves by main force and set themselves upon a purely professional pedestal (so that the laity may call them "Doc"), reminds of an adventure of Baron Muenchausen; the Baron was crossing a stream when his horse stepped from the safe ford into quicksand; with admirable presence of mind the Baron dropped the bridle, and seizing the tail of the horse with one hand and the mane with the other, he lifted the horse and himself on it, out of the mire onto the firm land. Some pharmacists are trying to emulate the Baron!

Our colleges of pharmacy are drifting away from the *business* of pharmacy and are introducing theoretical branches of study that are of no more practical value to the pharmacists than would be a course of lectures on the exegesis of the gospels, on the history of the Ottoman Empire in the thirteenth century, and a three months' laboratory course in a comparative experimental study of at least four kinds of incubators.

More and more the teachers of our colleges of pharmacy are chosen from among purely academic educators, who know nothing, either theoretically or practically, about the drug business; some of them could not make a pill, an emulsion, or wrap a package. Yet with the usual assurance of academicians these dreamers of theories have burdened and are still endeavoring to further burden pharmaceutical education with irrelevant and useless studies, for the purpose, perhaps, of "checking excessive competition in the drug business." And because students find difficulty in mastering these purely academic excrescences on pharmaceutical education, the clamor is raised that we must have a three years' course and a different grade of students than heretofore; and that the old-fashioned apprentices, from which sprang the sturdy rank and file of the membership of our American and State Pharmaceutical Associations, are no longer good enough to enter the drug business.

These teachers, and their schools, have a right to teach as they do; and those who want that kind of pharmaceutical education have a right to go to those colleges. But neither the schools or their adherents have a right to say that their methods of teaching are the only way; nor have they a right to try to have their way enforced "by law" as the only method of "protecting the public."

Most of the insinuations of incompetence and ignorance on the part of pharmacists have emanated from teachers connected with these schools with academic tendencies, as distinguished from those schools, which prefer practical technical training with less of academic frills. To my mind the greatest danger to pharmaceutical education lies in the excessive and unnecessary expansion of the course of studies, and in prolixity of teaching.

Within recent years there has sprung up a large number of smaller colleges of pharmacy, mainly in response to a demand by practical pharmacists for more rational and practical education than the larger and more time-honored colleges seem disposed to give at present, and it is to keep these newer schools from making inroads on their numbers of scholars that the present agitation to discredit common-sense practical education is made. If our leading colleges of pharmacy continue to make theoretical requirements that are uncalled for in pharmacy, they must eventually forfeit the support of practical pharmacists, and these newer schools will take their places as they then ought to do.

There are several features of the industrial life of to-day that students of sociology view with apprehension. One of the most dangerous and at the same time most un-American of these is the trades-unionistic effort of closing the door of opportunity against young men. Take whatever trades' union you will and you find rules prohibiting the employers from taking more than a certain quite limited number of apprentices in proportion to the number of his employees. The young man is therefore forced to remain an ordinary unskilled laborer, since all artisanships are closed against him in like manner; or, he attempts to complete in the field of brain-labor, thus often adding to the army of those who live "by their wits," or to the educated proletariat which is one of the greatest dangers of modern society, as the individuals constituting the educated proletariat furnish the most daring and clever criminals and anti-social agitators.

There was a time, when, like Lincoln, a young man with ambition could work in day-time and study at odd hours or even at night, and qualify himself for higher things than nature seemed to have in store for him at birth. Many of the most illustrious men in America, in business, as well as in the professions, in the past as well as among those now living, were and are such "self-made men," and America is proud of their records and achievements, and of the country that gave them their opportunities.

But now-a-days we have an un-American habit, imported along with a lot of other foreign curses, of thinking—"there ought to be a law"—whenever things do not come according to our way of wishing; and the "law" is invoked for every trifling discomfort until finally the law itself becomes the greatest of all discomforts and oppressors.

Not only is this the case in the trades' unions, but even pharmacists are falling into this vicious foreign habit of thinking. Often the very men who left their European homes to escape the oppressive supervision of their every action by a paternal government find that the servility inculcated in the minds of the governed for generations cannot be eradicated in a single generation in themselves, and from sheer force of habit they contiue to say: "There ought to be law . . ."

There ought never to be any laws in America that close the door of opportunity against any one; yet this is the drift of American pharmaceutical legislation, abetted by some of our most intelligent pharmacists. I have before me, as I write, the bulletin of one of the colleges belonging to the Conference of Teaching Faculties, in which it is plainly asserted that one of the objects of higher education in colleges of pharmacy is to "check excessive competition in the drug business," and to bring this about, this college advocates a number of laws that I hope the American Pharmaceutical Association will not approve of. This competition may be a nightmare in New York, or in Chicago; the City of New York and immediate vicinity, for instance, had 3000 drug stores in 1906, according to the prospectus of the New York College of Pharmacy, while at the same time the States of Alabama, Arkansas, Indian Territory, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, Texas, Missouri, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming all together had only a little more than four times as many pharmacies as the City of New York and suburbs alone.

In these States of the South and West there are thousands of people who must ride twenty miles or more for the nearest physician, and equally as far when they need quinine or cathartic pills. With less than 5 per cent. of its druggists, college graduates, with 7 States having less than 200 drug stores, and 4 States having less than 100 drug stores, this territory, tributary to St. Louis, does not need to lie awake at night scheming to make pharmaceutical education more difficult in order to "check excessive competition in the drug business."

Suppose that laws demanding a certain degree of fitness for the drug business may really be necessary, which I do not unqualifiedly admit, yet the Boards of Pharmacy should be required merely to ascertain whether an applicant for registration has such knowledge or not; and they should be forbidden, if necessary "by law," to inquire *where*, or *when*, or *how* the candidate acquired his knowledge of the business, and to let that influence them in voting on his fitness.

All men ought to have equal opportunities before the law; the young man who works all day, perhaps because he must support or help to support invalid or aged parents, or a widowed mother with younger brothers and sisters, and who cannot take the time or spare the money necessary to go to a high school or to a college of pharmacy, ought to have the right to spend his available time in study, and when he comes before a State Board of Pharmacy he should not be discriminated against because he did not get his knowledge in the one particular way dictated by a law instigated by what is practically threatening to become the trades' union of pharmacy.

The American way should be to question: "Do you know the business of pharmacy?" Not: "When, where or how did you learn it?"

Prof. Oldberg, in an article in the *Druggists' Circular* for July, 1906, said: "It must not be forgotten that the sole warrant for any pharmacy law is the proper protection of the public health. The welfare of the people must be considered *first* in any such law, and if that self-evident truth is ignored, pharmacy legislation must be a fraud or a failure and will not stand." If this "welfare of the people" is really the object of the laws (and where it is not an object of the law, the latter is a fraud), it ought to be immaterial to the state, the public, the "law" if you will, whether a man studied at home, with or without a correspondence course, or whether he first went to a high school and then to a college of pharmacy, or whether he learned what he knows from studying at night or by day, or whether he went to a college with more or less than three professors, or whether he ever went to any school whatsoever, provided only that somehow, somewhere, and at some time, he qualified himself to pass the required examinations to prove his fitness to be a druggist, and thereby his safety as regards the public. Any demands by the law, further than to examine him for this fitness, must be a fraud, according to Prof. Oldberg and to common sense.

The passing of a satisfactory examination before the proper authorities is the way for admission to the practice of law or medicine in many of our states, and this way should be good enough and American enough for pharmacy also. If practical experience is required, the state boards of pharmacy ought to inquire into this subject, and not the colleges. This would not prevent boards of pharmacy from recognizing diplomas of reputable colleges of pharmacy in lieu of the theoretical part of their examinations, but they should themselves test the practical qualifications of all applicants and ascertain the experience records; and they could still make proper rules in regard to what shall constitute colleges of pharmacy "in good standing" for the purpose of giving credit to graduates for their theoretical education.

If we could have a census of all those who are engaged in the drug business in the United States, we would find that all the graduates of all pharmaceutical colleges form but a very small percentage of the whole number; if we could then ascertain how many of those who have college diplomas are also graduates of a high school, we would find a vastly smaller proportion of the graduates to have such a diploma, than the graduates themselves are in proportion to all the druggists. In other words, we, the present pharmacists, have as a general rule, neither high school nor college diplomas, but we resent the insinuations so frequently made of late, that we are therefore ignorant or incompetent. It would be interesting, and perhaps a little startling, if we could have an "experience meeting" of all the members of this Association, and of all the teachers in our colleges, to find how many of us have no high school diploma, and even no college of pharmacy diploma except perhaps "by compliment" from some college.

I surmise, that if the truth would be told, the present agitation is not alone from concern for the welfare of the public, nor for the purpose of "checking excessive competition in the drug business," but also partly from a desire on the part of some of our colleges to curtail competition from the newer, more practical, and more technical colleges of pharmacy, which are making inroads into the attendance at the more ponderous academic schools.

I believe with Prof. Oldberg, that there should be a "square deal all around," and "justice to the public," and I believe that this means that we should not bar a young man from entering pharmacy or any other calling because there was no high school where he was raised, or because he was too poor to attend a college of pharmacy.

We have laws requiring State boards of pharmacy to inquire into the fitness of applicants for registration and for license as pharmacists; in the name of "justice to the public" and the American love of fair play, let the laws stop there. Let pharmacy call a halt on the passing of more laws. Let us lend our influence to undo the injustice now being done by some of the laws. Let us declare against the un-American method of limiting competition by law, and confine ourselves to the legitimate use of law—the welfare and protection of the people; in Missouri we have a motto:

"SALUS POPULI SUPREMA LEX ESTO!"
(The welfare of the people shall be the supreme law.)

Every one here knows that the welfare of the public is in no particular danger from the pharmacists, and that it has been protected in the past, and is now, in the present, without either oppression or injustice, and without legislation compelling one or any other number of years' attendance at high school, and without any compulsory collegiate education. Young men who feel it to be to their best interests for life will still go to colleges of pharmacy, and they should be allowed their choice between the technical and the academic schools, both of which are good schools and both of which have certain advantages and perhaps certain disadvantages as compared with each other, but both of which can and do fit out young men to be "safe" pharmacists. If the State boards of pharmacy give thorough, but fair and practical examinations, young men will appreciate the fact that a college of pharmacy education is a great help in passing these examinations, and they will go to colleges of pharmacy if they can afford to do so. At the same time no one will be absolutely barred from entering the practice of pharmacy, if he has qualified himself in any other manner for the business. In regard to pharmaceutical legislation and education it were well if we had a motto:

"SALUS POPULI SOLA LEX ESTO!"
(The welfare of the people shall be the only law.)

Mr. Wall's paper was received with evident favor by a considerable number of those present, as manifested by the vigorous applause given it, but was immediately followed by a lively discussion going to show that many of the members differed with him very widely on this important question.

The first speaker was Mr. F. J. Wulling, of Minneapolis, and he began by saying that Mr. Wall's paper was a most excellent *resume* of the usual arguments made on the wrong side of the question. Mr. Wulling then went on at length to criticise the statements of the author of the paper on a number of points, differing with him sharply in most instances. For instance, he did not agree with him in the idea that arithmetic, algebra and Latin should be taught in the schools of pharmacy; he thought this knowledge should be acquired by the student before entering the college, so that it might be practically applied there in his work. He referred to the case of a certain college which was much criticised twelve or fourteen years ago for the higher training it required in chemistry, mathematics and Latin, but stated that its graduates, who at first could hardly get a position, were now much sought after, because it was recognized that they not only had theoretical knowledge, but practical knowledge as well. He did not agree with the author that the poor boy was barred from entering the profession of pharmacy by the educational tendencies of the times, but held on the contrary that his real interests were being determined and made easier by the better facilities afforded—although it was true that the poor boy had to exert himself to greater extent, which was not objectionable, because if he was poor in spirit and the aim of life he was not wanted in the ranks at all. He dissented from what he understood to be the claim that only two or three medical colleges stood for a prerequisite clause. He commended the point made in regard to practical examinations being conducted by boards of pharmacy, and believed the boards were in many cases better qualified than the faculties for determining the practical qualifications for registration; he thought the theoretical examinations might be conducted by the faculties, and the purely practical, such as the making of preparations and dispensing of prescriptions, by men in the actual practice all the time. He believed in a high school education as a necessity for the future success of the student in pharmacy, under present conditions and tendencies, and thought it most desirable, not only for the purpose of facilitating the work of the student, but as making him more competent in all other respects, the mental training being more valuable than the actual knowledge acquired.

Mr. Remington stated that he could see but little hope for the Section's accomplishing the work before it—even on the thirteen propositions submitted—considering the lateness of the hour and the range the discussion was taking. He thought the debates should be rather in the session of the Joint Conference of Boards and Faculties, leaving the Section more time for the transaction of its legitimate business. The Chair explained that he anticipated from the start that the bulk of the discussion would come on the second proposition, and that some of them would be hardly discussed at all.

Mr. Mayo made the point that the discussions should be confined, under the rule, to the particular proposition under consideration. The Chair stated in answer to this that he understood the paper of Mr. Wall referred exclusively to the subject of preliminary education, and that it was in that view that it was called for at this time. He said that the discussion would be hereafter confined to the subject-matter in hand.

Mr. H. L. Taylor, of the Educational Department of the State of New York, was recognized by the Chair and spoke upon what he termed the "numerous inaccuracies" of the paper read by Mr. Wall, which occurred to him as a reflection upon the cause of American education. He protested emphatically against a number of the propositions laid down by the speaker, and, for one thing, did not believe this Association should stand for the plane upon which Mr. Wall was disposed to place pharmacy, that of a business instead of a profession. He called for the author's sources of information for the utterances made. In reply to his criticism that there was too great a disposition to appeal to restrictive legislation for all real or imaginary troubles, he went back to the Middle Ages and took a leaf from the history of the German Empire to show that legislation upon the subject of medicine and pharmacy had begun at that early time and continued ever since. He combated the idea of "trades-unionism" in pharmacy in America, and cited the conditions in England to-day in support of his position. He gave some personal experiences to illustrate his views.

The Chair called for the nomination of officers for the ensuing year as the next order of business.

Mr. Wilbert, of Philadelphia, nominated the present Chairman to succeed himself, saying that Mr. Oldberg had outlined a plan of procedure it would take several years to carry out, and he believed he should be in charge of it for another year at least. This motion was seconded by Mr. Anderson, of New York.

Mr. Lowe, of Philadelphia, nominated Mr. Joseph W. England to succeed himself as Secretary. Mr. England was disposed to decline the nomination, but consented to leave his name before the Section upon the earnest representation of the Chairman that he desired him to serve another year in case he himself should be re-elected.

On motion of Mr. Lowe, the Section then adjourned.

SECOND SESSION—WEDNESDAY MORNING, SEPTEMBER 5, 1906.

The second session of the Section on Education and Legislation was called to order by Chairman Oldberg at 10 : 30 a. m.

The Chair called for the reading of the minutes of the first session, but the Secretary, to save time he said, moved to dispense with the reading, and this motion was seconded by Mr. Lowe and carried.

Further nominations for officers of the Section were called for as the next business in order, the Chair stating that at yesterday's session two nominations were made, one for Chairman and the other for Secretary, but that there were five offices to be filled, since there were three associates on the committee.

Mr. Lowe moved that nominations for Chairman and Secretary be closed, and that these two officers be allowed to select their own associates upon the committee. The Chair stated that he did not think this would be legal; that this question had come up at the last meeting, and the associates had been named by the Section, because the By-Laws seemed to require it.

Thereupon, Mr. England nominated Mr. D. F. Jones, of South Dakota, for one of the associates; Mr. Lowe nominated Mr. Harry B. Mason, of Detroit, as another, and Mr. Claus nominated Mr. William K. Ilhardt, of St. Louis, as the third associate. Mr. Claus moved the nominations be closed, and the motion prevailed.

The Chair declared the election of officers as now in order, and asked how the Section would proceed in the matter. Mr. Wilbert moved that the Secretary be directed to cast the ballot of the Section for Mr. Oldberg to succeed himself as Chairman; the motion was seconded and carried, and the Secretary announced that he had cast the ballot as directed. Mr. Claus then moved that the Chairman cast the vote of the Section for the remaining nominees. This motion likewise prevailed, and the Chair announced that he had cast the ballot for Mr. England as his own successor as Secretary, but not for the associates, and asked if it was the desire to have the Secretary cast the ballot for the associates. On motion of Mr. Claus it was so ordered and the Secretary cast the ballot, and, at request of the Chair, announced that Mr. Oldberg had been elected Chairman, Mr. England Secretary, and Messrs. Jones, Mason and Ilhardt associates on the committee.

The unfinished business of yesterday's session was now taken up, and the Chair stated that, after consultation with the other officers of the Section, he had considerably abbreviated the propositions submitted in the printed program, in order to facilitate the work of the Section, as he realized the impossibility, otherwise, of completing the program. The propositions as revised contained the gist of the original propositions, but with some of the details left out. He then called on the Secretary to read the first proposition.

1. No person should be licensed to practice as an assistant pharmacist who has not attained the age of twenty-one years.

On motion of Mr. Ebert, seconded by Mr. Fennel, the proposition was adopted as read.

The Secretary read the second proposition:

2. The pharmaceutical training and experience required for the licensing of assistant pharmacists should together occupy four years, all of which may consist of drug-store practice, or which may consist of three years' drug-store practice and one year's work in a pharmaceutical school, or of two years' drug-store practice and two years' work in a school of pharmacy.

Mr. Lowe moved to adopt the last clause, of two years' work in the store and not less than two years in a college of pharmacy. This motion was seconded by Mr. Rusby.

Mr. Ebert wanted it three years of drug-store experience and two years in a college of pharmacy; he considered this a necessity. He would like to see the assistant a man who would be capable of taking charge of the store, but not necessarily a full registered pharmacist. At the present time the assistant has practically no standing. The crying need is for fewer registered pharmacists and more clerks, the tendency of the times being that as soon as a man has been registered he wants to open a store of his own and become a competitor of his former employer. Mr. Lowe said this would be satisfactory to him.

The Chair asked Mr. Lowe if he understood his motion to be, that the pharmaceutical training and experience required for the licensing of assistant pharmacists should be four years, of which two should be drug-store training and two in a college of pharmacy. Mr. Lowe replied that his motion contemplated *not less* than two years in a school of pharmacy, which was a little bit different.

The Chair called attention to the fact that the original proposition did not make college attendance obligatory upon assistant pharmacists, but Mr. Lowe's motion did.

Mr. Wall, of St. Louis, was of the opinion that the proposition as read should stand.

The Chair stated that the original proposition was really a little in advance of the general practice as to the requirements for assistant pharmacists.

Mr. O. F. Niethammer, of Chicago, expressed himself as thinking the original proposition should stand, as the fairest to all concerned. The absolute requirement of two years in a college of pharmacy, in addition to the same period of drug-store experience, would prevent many a young man of limited means from entering pharmacy at all. He was in favor of three years of practical experience and one year of college work.

In answer to an inquiry from Mr. Apple, of Philadelphia, as to the effect of the several propositions upon the scarcity of drug clerks, the Chair stated that the requirements of the proposition under consideration were not much in advance of the requirements generally in effect, and less in some instances; and he felt sure that if this and the proposition as to registered pharmacists were adopted, clerks would remain such longer than in the past, and to that extent at least it would help to relieve the scarcity of clerks. He thought it wiser, as in the proposition submitted, to put the matter in the alternative, and not absolutely require a term of college attendance for assistant pharmacists, as being more in accord with the prevailing sentiment among the druggists of the country, whose approval was desired of whatever was done in this matter.

Mr. Hallberg was inclined to agree with this view.

The Chair suggested that as all the propositions were closely related to each other, it would perhaps be better to read them through before proceeding further, and asked the Secretary to read them, which he did:

2. The pharmaceutical training and experience required for the licensing of assistant pharmacists should together occupy four years, all of which may consist of drug-store practice, or which may consist of three years drug-store practice, and one year's work in a pharmaceutical school, or of two years drug-store practice and two years work in a school of pharmacy.

3. No person should be licensed as a registered pharmacist and given the right to conduct a pharmacy who has not served at least two years an assistant pharmacist, and attained the age of twenty-three years.

4. The pharmaceutical college training and drug-store experience required for the licensing of registered pharmacists should together occupy not less than five years, of which not less than three years should be drug-store experience, and graduation from an approved school of pharmacy should be required of all candidates for license as registered pharmacist.

5. All candidates for license to practice pharmacy should be required to pass such examinations as may in the opinion of the Board of Pharmacy be deemed necessary. Due credit should be given for successfully completed courses in approved pharmaceutical schools, but all candidates should be examined upon their ability to correctly read and dispense prescriptions.

6. A preliminary general education of not less than one year's satisfactorily completed high school work, or its educational equivalent, should be required as a prerequisite to the pharmaceutical experience or apprenticeship required for license and for admission to pharmaceutical schools.

Mr. Fisk asked, for information, what was meant by one year in college—whether the minimum requirement by the Conference of Pharmaceutical Faculties, where the entire course may be completed in twelve months, or what. Mr. Lowe said he understood it to mean one collegiate year, not a year of calendar time. The Chair answered that the year referred to meant twelve months, and of the total requirement of four years, if the young man spent only six months in college, then he would have to have three and a half years of drug-store experience.

Mr. Ebert said it should be a complete course in pharmacy, and not half a course.

Mr. Rusby, as the seconder of Mr. Lowe's motion, asked if he would be willing to accept a compromise and make the time four years, at least one year of which should be a collegiate education in a college of pharmacy. He thought this would meet all objections. Mr. Lowe said he did not want to be unreasonable or seem to raise the bars too high, and he would consent to this modification.

Mr. Wilbert could not see how, under the terms of the proposition as read, a great deal could be done in the way of getting a better grade of assistants than at the present time.

Mr. Hallberg agreed with Mr. Ebert theoretically, that an effort should be made to raise the status of assistants to that of registered pharmacists, as to all privileges except that of opening a pharmacy on his own account, and to this end he should be a graduate or have taken a full course in pharmacy ; but inasmuch as the status of assistants was not likely to be so raised in the near future, he favored the proposition of Mr. Lowe as modified by Mr. Rusby, that the time of apprenticeship should be four years, at least one of which should be instruction in a school of pharmacy.

The Chair here said that while he had the reputation of being very radical on this subject, he believed he was rather more conservative than some of the speakers, and stated once more that the object of the proposition was not to make it compulsory that the assistant pharmacist should attend a college of pharmacy, but that if he did so it should not be counted against him, but he should be allowed credit for it upon the four years of experience required. Mr. W. G. Gregory, of Buffalo, N. Y., expressed himself as very much pleased to find that he had at least a "mental resemblance to his friend Hallberg," and agreed with him as to a college course being a good thing for the assistant, the proprietor and the public. That is, in theory he agreed with that view, but practically he did not, as he considered it entirely out of the question under present conditions to actually require a college course of assistants. "It would be lovely, but not practicable." Let him take his four years' course of training in the drug store, he said, and put such environment around him as to stimulate him to complete his education by a course in a college of pharmacy.

Mr. Wulling, of Minnesota, liked the proposition, as long as the assistant desiring to become a proprietor would have to take a college course later on anyhow. He thought it might be well to put it four years of drug-store training, from which should be deducted any time spent at a school of pharmacy not in excess of two years, the limit of school work suggested by Mr. Rusby. This he considered in the nature of a fair compromise, which would not reduce the standing of the pharmacist desiring to become a proprietor, with whom it would be necessary to meet the college requirements suggested.

The Chair, in attempting to state the motion of Mr. Lowe as amended by Mr. Rusby, preparatory to taking a vote upon it, had difficulty in satisfying those gentlemen as to the exact purport of the motion and the precise language in which it should be expressed, and a rambling discussion followed, participated in by the Chair and these gentlemen, and by Messrs. Hynson, Remington, Hallberg, Wall, Roehrig, Wulling, Ebert, Eliel, Sherrard, Whelpley and Wooten, as to the wording of the motion, manner of procedure, meaning of the term "college course" as to number of weeks comprised therein, etc., resulting finally in the reading by the Secretary of the motion as amended in this form: "Four years experience, of which one collegiate year shall form a part;" amending which, Mr. Ebert moved to change the word "shall" to "may," and Mr. Eliel seconded, but other discussion followed and this motion was not put to a vote. There were calls of "Question!" on the motion of Mr. Lowe as amended by Mr. Rusby, as stated by the Secretary, and the motion was lost, upon division, by a vote of 20 for, to so overwhelming a vote against it that the Chair said it was not worth while to count it.

Mr. Neithammer, of Chicago, then moved to adopt the original proposition as read, the effect of which, upon the suggestion of Mr. Weinstein, of New York, the Chair again stated, for the benefit of members who had come into the room late.

Mr. T. J. Bradley, of Albany, N. Y., thought the proposition was somewhat indefinite, in that it required a total period of training of four years in the first place, and then allowed three years of drug store training, supplemented by one year at college, which would mean really only three years and six months of training.

The Chair responded that it was originally intended that the entire period should be four years, but there were so many present that seemed to be governed by the understanding that the usual collegiate year should be the equivalent of a full year in a drug store, he would put the question in this form: That four calendar years of drug-store experience shall be required of the candidate for registration as assistant pharmacist, where he takes no college course, but where he does take college training, then each academic year of such completed college training shall be deducted as one year of drug-store experience.

And the motion was so put on the original proposition (No. 2), and it was adopted unanimously.

Said resolution as adopted then read:

2. The pharmaceutical training and experience required for the licensing of assistant pharmacists should together occupy not less than four years, all of which may consist of drug-store practice, or which may consist of three years drug-store practice, and one academic year's work in a pharmaceutical school, or of two years drug-store practice and two academic years' work in a school of pharmacy.

The Secretary read the third proposition:

3. No person should be licensed as a registered pharmacist and given the right to con-

duct a pharmacy who has not served at least two years as an assistant pharmacist, and attained the age of twenty-three years.

Mr. Roehrig objected to putting the minimum age at twenty-three years, as being contrary to the Constitution of the United States and the federal laws, making a man of legal age at twenty-one.

Mr. Mason suggested that the Constitution placed the minimum age for President at thirty-six, but Mr. Roehrig said this was especially provided for in that instrument, and was the exception to the rule.

Mr. Hallberg suggested that as the age for licensing assistant pharmacists was fixed at twenty-one years, that was all that was necessary. The Chair agreed with this view, and said it was really unnecessary to mention the age of registered pharmacists in the proposition just read, and that it might be stricken out. This was done accordingly, by eliminating the clause, "and attained the age of twenty-three years."

A vote was taken on the third proposition, and it was adopted with but one dissenting voice.

The fourth proposition was read :

4. The pharmaceutical college training and drug-store experience required for the licensing of registered pharmacists should together occupy not less than five years, of which not less than three years should be drug-store experience, and graduation from an approved school of pharmacy should be required of all candidates for license as registered pharmacists.

Mr. Wilbert, seconded by Mr. Hallberg, moved to adopt.

Mr. Niethammer asked for an explanation of the clause as to the three years of drug-store experience required, saying that to become a registered pharmacist one must have been an assistant for two years, and with two years of (previous?) experience in a drug store, that would make four years, while the statement in the proposition is that he cannot become registered until after three years of such training. The Chair responded that the object was, simply, not to deny credit to the candidate for any college attendance before his registration as an assistant, that was all.

Mr. W. O. Gross, of Fort Wayne, Ind., referred to the expression "*approved* college of pharmacy," and wanted to know who would "approve" them. The Chair answered the Boards of Pharmacy.

The motion to adopt the proposition was then put and carried.

The fifth proposition was read :

5. All candidates for license to practice pharmacy should be required to pass such examinations as may in the opinion of the Board of Pharmacy be deemed necessary. Due credit should be given for successfully completed courses in approved pharmaceutical schools, but all candidates should be examined upon their ability to correctly read and dispense prescriptions.

The Chair explained that this left it optional with the Boards as to what they would include in their examinations, except that it required them to examine on prescriptions, and the ability to correctly read and dispense them.

On motion of Mr. Hallberg, the proposition was adopted.

The Chair read the sixth (and last) proposition:

6. A preliminary general education of not less than one year's satisfactorily completed high-school work, or its educational equivalent, should be required as a pre-requisite to the pharmaceutical experience or apprenticeship required for license and for admission to pharmaceutical schools.

Mr. Whelpley moved to substitute for the first clause, "A preliminary education sufficient for entrance upon high-school work;" this in place of the requirement for one year of satisfactory completed high-school work.

Mr. Claus seconded this motion, saying he did not believe the time had yet come for the adoption of such stringent regulations. The tendency would be to make drug clerks still scarcer, and they were hard to get now.

Mr. Wall vigorously opposed the one year of high-school requirement. The South and West especially were not in a condition to stand it, he said, and the St. Louis College of Pharmacy gets most of its students from those sections—five-sixths of them being from places where there are no high schools, and they cannot get the equivalent. It would be impossible for the St. Louis College of Pharmacy to exist and live up to this requirement. He quoted some figures to show the wide divergence between New York state and Texas and the southwest in the matter of educational qualification. He did not believe it was practical to adopt uniform regulations to apply all over the country, on account of the varying conditions, and to adopt this clause for the Western States would mean that the colleges of pharmacy would go under, or they would have to "fake" the equivalent of such a standard, and that they did not want to do.

Mr. Hallberg asked Mr. Wall what requirements as to preliminary education were made as to the large number of medical students in St. Louis, drawn from the same territory as the students of the College of Pharmacy. Mr. Wall answered that he was not particularly familiar with the requirements of the medical schools, but he could say that their classes were much smaller than before they raised their requirements.

The Chair stated that it might clear the atmosphere to call attention to the fact that this was merely a recommendation to the boards of pharmacy, and that if the boards should require one year of high-school work before the apprenticeship begins, he failed to see how the schools of pharmacy could help getting students on that basis.

Mr. Ebert agreed with Mr. Wall in his position that the Association should not attempt to make pharmaceutical regulations for the whole country, when the conditions are so different in different parts of it. He was in favor of letting well enough alone, and not recommending any more suggestions to the boards of pharmacy at this time. It was not wise to make the regulations too numerous or severe.

Mr. Whelpley made the statement that the medical colleges of Missouri and that section secured as students those who graduated at the high schools; they went into medicine instead of into pharmacy. The physicians are more in favor of this requirement, and this has forced the high school graduates into medicine rather than pharmacy. The question is merely one of how best to advance the interests of pharmacy in that section of the country.

Mr. H. L. Taylor, of the New York Educational Department, discussed this proposition at length, and took sharp issue with the statements made by Mr. Wall at both yesterday's session and at this session. Questioning the statement made by Mr. Wall, as he claimed, that there were only three or four States that had a preliminary educational requirement in medicine, he produced a little hand-book of statistics, of date June, 1906, from which he quoted to show that out of the 54 political divisions of the United States, 12 of them required a high school training as a preliminary for entrance to the medical schools, and 41 required a medical school diploma before admission to license examination. With dentistry it was much the same way, 10 States requiring a high school education as a preliminary to license examination. The New York prerequisite law shows two facts, viz., first, the general preliminary requirements for admission to the schools, and second, a professional requirement for admission to examination. The License Board there must insist on the students presenting a pharmacy student's certificate, and also a pharmacy school diploma. He said if Mr. Wall meant that only three States in the Union required a preliminary high school training, that was an entirely different thing from saying that both requirements were made—both a high school training and a diploma from the schools. Mr. Taylor went on to say that he had, within the past two years, had occasion to come in contact with the conditions existing in St. Louis as to pharmaceutical education and its relation to the St. Louis College of Pharmacy, and his interest was excited in what he saw there, and he recognized that they were subject to certain limitations, but he did not believe there was any warrant for the statement made that Missouri and New York differed so diametrically in educational opportunities and conditions. He then launched out into a long array of figures to prove his contention. He showed that Missouri had five and one-quarter millions population to New York's seven and one-half millions, or, in round numbers, a half more than Missouri, but that at the same time Missouri's area was a half more than New York's, therefore the density of population was about a quarter as much—"the half of a half being a quarter," according to his arithmetic. But while the density of population in Missouri was one-fourth of that of New York, her secondary schools, or those equal to two years of high school, according to the latest reports available (1902–3), were practically one-half those of New York, Missouri having 363 such schools to New York's 800, or as 9 to 20, while in these secondary schools Missouri had 27,000 high school students as against 100,000 in New York. Continuing his comparison, he said there were, at the date of the publication referred to, two schools of pharmacy in Missouri and four in New York, with an attendance in Missouri of 287 students as against 662 in New York, or as 9 to 19, approximately one-half, and, considering the difference in density of population, the comparison was greatly in Missouri's favor. He disclaimed having anything against the St. Louis College of Pharmacy, and closed with the statement that he would recommend to the Board of Pharmacy in Missouri to require of all those intending to enter the ranks of pharmacy one year of high school education and two years in a college of pharmacy as a prerequisite for examination and admission. He believed the boys and girls of Missouri should have an opportunity to lift themselves up from being mere clerks, and to stand as men and women in the profession and in the walks of life. "One Garfield," he said, "out of the schools of Ohio was enough for the 99 fellows who did not attain to what Garfield attained."

Mr. Candidus, of Mobile, said the remarks just made might apply to New York and some of the larger States, but they could not be applied to Alabama. In his city for instance, where they have a very fine school system, the percentage of graduates from the high-school is very small—only about 15 per cent.—and very few of these enter pharmacy; consequently, they have to take boys of less than high school education and train them up.

Mr. McIntyre, of New York, said if it was true, as stated, that assistants were getting scarcer all the time in the stores, and students getting less and less in the schools, the conditions leading to that situation ought to be changed. Twenty years ago, he said, the College of New York made a common-school educational requirement for entrance. To-day New York has a prerequisite law making the entrance requirement still higher; but still, the pharmacists there do not feel that it deprives the colleges of students or the stores of assistants. The need of the times is to make the conditions more stringent, which, instead of depleting the ranks of pharmacy, would rather increase them, and out of better material at that.

Mr. Wulling said after listening to the statements as to the educational conditions in Missouri he felt like extending an invitation to emigrate to Minnesota. He did not believe the conditions in Missouri could be as bad as pictured. Minnesota, twelve or fifteen years ago, was said to be in a similar condition. He diagnosed the case, and came to the conclusion that there was more pessimism than was justified by the actual conditions existing. The College of Pharmacy in Minnesota at that time was expected to matriculate students who had not completed the sixth or seventh grade, but they were refused admission. In 1893, the institution fixed the preliminary requirement at one year of high-school training, and in 1895 this requirement was raised to two years of high school-work, and the pharmacists were given due notice that their apprentices must come up to that requirement. They grew up to the standard set, and instead of decreasing the numbers they continually increased, until now out of 80 students matriculated 74 are full high-school graduates, or have the equivalent of it. He believed the same result would come about in Missouri, if the St. Louis College of Pharmacy would have the courage to publish to the world that the preliminary educational requirement would be one year of high school, and then two years; and he had no doubt but that in a dozen years Missouri could require a full high-school course, and at the same time have a full complement of students.

Mr. Wall here took occasion to correct Mr. Taylor in the statement that he had said in his paper read before the Section that there were but three or four States that had a preliminary requirement in medicine. What he did say was, that the majority of the States, as far as he knew, did not require a diploma (though he might be in error in this), and that if that was good enough for the physician it should be good enough for the pharmacist. He disclaimed any prejudice against the State of New York, as he had received his medical education there. Mr. Wall said he would read a paper in the afternoon which would quote statistics and give reasons for the statements he had made, but he did give some figures going to show that a very large percentage of the students of the St. Louis College of Pharmacy was drawn from small towns of 5,000 population and less, where there were no high-schools, 46 per cent., he said, as against 12 per cent. from the same class of towns in New York.

Mr. Hallberg said that the comparison made as to New York did not apply, because the law as to registered pharmacists of the first class did not apply to towns of less than a million population. He also corrected Mr. Taylor in his statement that Missouri had five and a quarter million population, saying that the last census gave it 3,100,000, and it could hardly now have more than 3,500,000; so the gentleman's figures as to comparative density of the population of New York and Missouri would be materially affected by this variance. In the large cities like Chicago, he said, the percentage of boys to girls graduating from the high schools was only about 20 or 25, as the temptations or necessities of business called them away. He payed a high tribute to the splendid educational opportunities in this country, and declared that there was no good reason why any ambitious boy or girl should not seek and obtain a high school education. The pharmacist cannot be classed with the physician professionally, if his educational standard is lower than that of the physician. If the prevailing condition is satisfactory, then the arguments of the gentleman from Missouri are sufficient; if it is not satisfactory, then there must be a change and advance.

Mr. Rusby, of New York, said he would like to point out two or three things that had been missed by the other speakers: First, that the resolution just adopted as to registered assistant pharmacists (No. 2, as amended) would result in giving all the clerks desired, although they would not be allowed to become registered pharmacists without a better education than that required by the resolution. Second, that there was nothing compulsory about the resolution now under consideration (No. 6); that it did not require as a preliminary a high school education, but merely recommended it, and he did not believe the members would want it to go out to the world that the American Pharmaceutical Association was in favor of anything less—he did not believe that they would want this Association to say that a grammar school education was sufficient for the young man intending to become a licensed pharmacist. He was opposed to the amendment of Mr. Whelpley, and in favor of the resolution as read.

Mr. Alpers gave his voice for higher education, and said some men stood in their own light in such matters. He related an amusing incident of his own experience to illustrate this point. He did not believe a man without education was capable of understanding the intricacies of botany, chemistry and pharmacy. With higher education, the young man engaged in pharmacy would take a broader view of his calling, and would no longer look upon it as drudgery, but would come to love pharmacy and be proud of it.

Mr. Charles Gietner, of St. Louis, thought Mr. Wall had very fairly stated the conditions in Missouri. Missouri does not object to higher education, in whatever form it comes, whether by high school education or otherwise, but she does object to having placed upon her the absolute requirement that the students in her colleges should come with a certificate from a high school, without regard to the conditions they had to meet in that territory. Besides, her Board of Pharmacy (of which he is a member) makes it a rule that every applicant who comes before it for examination must have a proper education, and that is sufficient protection.

Mr. Whelpley said that Missouri was the first to come before the American Pharmaceutical Association and plainly state the condition of affairs without equivocation, and if this had been done by other states years ago there would have been a much further advance in pharmaceutical education than there is to-day. He said the condition of affairs in Missouri was simply this: That they were not prepared to advance as rapidly as some other sections, particularly in the east; but they were, nevertheless, advancing, and would continue to do so. The matter of uniting the College of Pharmacy with a university had been considered, but it was decided that, under prevailing conditions, it would simply interfere with the progress of pharmaceutical education, rather than advance it. The conditions in Missouri, he said, were very similar to the situation of the man in jail whose lawyer assured him he could not be put there for the offense charged against him—he was there all the same; and it was that way in Missouri.

This ended the discussion; and Mr. Ebert, of Chicago, moved, in what he said was the best interest of the Association, to lay this whole subject of preliminary education on the table, and the motion was seconded by Mr. Roehrig. On an aye and no vote, the motion was apparently lost, and division was called for, with the result that the vote stood 31 for the motion to lay upon the table to 70 against it, and the Chair declared the motion lost.

Thereupon, Mr. Whelpley's motion to reduce the preliminary educational requirement to a grammar school education, instead of one year of high school, was put to a vote and lost.

The question was now upon the sixth proposition as read, that one year of high school training, or its equivalent, should be a prerequisite to pharmaceutical experience or apprenticeship. Mr. Niethammer moved to adopt, and the motion was carried with applause.

Mr. Ebert said he had in his hands the report of the Committee on National and State Legislation, but as the Section would have no time to consider it he moved to refer back to the general session. Mr. Mayo seconded the motion and it prevailed.

The Chair stated that the discussion of the various propositions just disposed of had consumed so much time as to make it imperative that the reading of the various papers before the Section be omitted, and that they be referred for publication.

Mr. Hallberg nevertheless begged for five minutes, in which to present the substance of a paper he had prepared on the subject of the A. Ph. A. as a post-graduate course for retail pharmacists, and the privilege was granted. The text of the paper here follows:

THE AMERICAN PHARMACEUTICAL ASSOCIATION—THE POST-GRADUATE COURSE FOR THE RETAIL PHARMACIST.

BY C. S. N. HALLBERG, PH. G.

The late Professor Pancoast in addressing the graduating class of the Jefferson Medical College some thirty years ago, in awarding the diploma, in a most forceable manner impressed upon the graduates that the possession of the diploma was not a certificate of experience, competency and skill as practioners of medicine, but simply a testimony that the recipients had pursued a certain line of education, had acquired a certain amount of knowledge as far as could be determined by examination, were sufficiently informed to safely handle patients and a recommendation that the people might entrust them with their patronage when sick or afflicted.

While uttered so many years ago by one of the then greatest medical leaders, the proposition is as true to-day as it was during the centennial anniversary of the Declaration of Independence and just as true of all other vocations or professions, as that of medicine.

In order to compensate as far as practicable for the lack involved in the collegiate instruction, the various professions and especially that of medicine instituted many years ago, what are known as post-graduate courses.

Many of the most successful physicians and surgeons and particularly the specialists devote a certain amount of their valuable time every year or two in visiting medical centers both at home and abroad, in order that they may keep fully abreast with the developments of medical science.

The leading specialists in the large cities in order to hold their own at the head of their branch must visit the great specialists in all sections of the world, in order that they may be able to obtain at the very seat of knowledge, the very latest demonstration in new processes and operations. Nor is distance a barrier.

To a small town in Minnesota, scarcely found on the map, surgeons of world-wide reputation come from all parts of the earth that they may, with their own eyes, see how the greatest surgical feats are produced in a most unpretentious establishment by two of the world's greatest surgeons, the two brothers Mayo.

Why do these medical men spend so much time and money to better qualify them for their work? Undoubtedly many, if not all, are directed by that irresistible force, which appeals to all educated men engaged in a profession. Love for the work, ambition to succeed, to excel and to acquire reputation. It is true that in some professions this is apparently not taken so much advantage of as in medicine. But if we look sufficiently deeply into the methods of the men that follow various callings we will find that they prosecute the same plan and principle. The lawyer engages in politics, the preacher in economical and social reformation, the literary man is irresistibly drawn into the ranks of the "opinion moulders"—the journalists. The pharmacist appears to have shown but little interest in this movement. His education often is equal to that of any of these named classes or other professions, his environments are the same, his opportunities almost equally great, yet with few exceptions, those who specialized as instructors, authors, journalists and organizers, the principle has not been applied.

It is believed that there is as vast a field, one as rich in practice, if not as rich in financial remuneration, in the retail practice of pharmacy as in any other branch or calling. It is only because no definite plan, no systematic effort concentrated and concerted has been invoked that so little has been done by the retail pharmacist. It is believed, however, that the time and opportunity are now at hand.

That there are many directions in which the retail pharmacist might by co-operation with his fellows add his share to the progress of civilization is exemplified in that which is nearest and dearest to every human being, the protection and preservation of health. All new movements must have some central governing body which may through research and through collective efforts assemble facts and through their systematic presentation initiate certain work and direct it along scientific lines toward the desired end. In pharmacy there is one such body on the North American continent, the American Pharmaceutical Association.

Through its over half-century experience it has already demonstrated the possibilities of such co-operative work, without the intervention of any government but simply by voluntary co-operation with the medical societies, it has decennially presented a work, the United States Pharmacopœia, which is fully equal to similar works which owe their authority and significance largely to the royal imprint and the fact that they become laws by the *ipse dixit* of some crowned head.

As though this was not sufficient to demonstrate the possibilities in pharmacy, this Association has elaborated, entirely on its own account, another work which bids fair to be of equal practical importance and benefit, especially to the retail pharmacist, the National Formulary.

Now after all these years of unremitting labor in the cause of purity, strength and uniformity of medicines this Association has the satisfaction of having its work receive the greatest compliment that can be bestowed namely the endorsement and seal of approval by the Congress of the United States, by incorporating these two works in the statutes of the republic.

While these two works are now recognized as authorities for medicines in this country, there is a responsibility placed upon the pharmacist greater than ever before, as well as conferring on him the priceless privilege to demonstrate to the medical profession the only way to secure the indispensable requisites for the practice of medicine, namely, the identity, purity, quality and strength, which may be summed up as uniformity in medicines, by using and prescribing the articles of the U. S. P. and the N. F.

As is well known, the medical profession through its societies, national, state and county has instituted a campaign for the reformation of the materia medica.

The leading men to-day, the teachers, authors and journalists of the better class are pledged to the campaign of medical reformation along the line of education, legislation and the use of such medicines and therapeutic agents only as are in the U. S. P. and N. F., or if not comprised in these works, such articles only as conform to the ideal of these standard works.

The physicians, as far as sentiment can be expressed, through associate effort, stand committed to-day to the proposition that they have made a great mistake in favoring the use of all kinds of proprietary medicines, often of secret or misleading composition, and always of greatly exaggerated claims as therapeutic agents, when nothing but the simplest ordinary pharmaceutical mixtures, instead of favoring the preparations of the U. S. P. and N. F. In the words of one of the men earliest enlisted in this movement "The physician refuses longer to be the unpaid peddler for those proprietary medicine men."

And in the language of still another of the most eminent medical men, "We physicians have declared our position, it is now up to you pharmacists to show that you are willing, competent and able to furnish us the preparations of the U. S. P. and N. F." This brings into the practice of pharmacy a new idea and new movement, namely, for the pharmacist to assume the responsibility which the physician has thrust upon him and to fully demonstrate that he is not only able and willing, but anxious to do his part of this work.

And what is this work? It is to resume his old position as a preparer and compounder of drugs and medicines, to resurrect the lost art, to come back to his own, to be a hand-maiden (Hygeia) to the physician (Esculapius) instead of continuing to be the hand-me-down-purveyor of ready-made mysterious polypharmacal compounds.

With nearly every medicinal want covered by the preparations of the new U. S. P. and especially the N. F., a plan must be systematically followed to so thoroughly acquaint the physicians with these books as to leave them no excuse for going outside of them, as far as the pharmaceutical preparations contained therein are concerned. This Association should lead in this movement. The local branches should undertake the work, by virtue of their location they will command the attention and respect of the local medical profession.

Nearly every county has a medical society. In every such county should be found one or more pharmacists, who would appear before the county medical society, briefly to present the chief object and purpose of our works, the U. S. P. and N. F. and call attention especially to the formulas therein for the most well-known of these preparations. This might be followed by exhibition of specimens of the preparations. This work then to be supplemented by presenting to the physicians an Epitome of the U. S. P. and N. F. From time to time circulars should be sent to the members of the medical society calling attention to the preparations particularly seasonable at the time, with a list of the names of the members of the local branch of the Association who have on hand, or are ready to prepare, these preparations.

This is far more dignified a way to introduce the U. S. P. and N. F. preparations to the physicians than to resort to sampling and detail work, which has grown to become so great a nuisance that any one attempting it must unwittingly be placed in the same category by the physicians as are the hordes of nondescript-fly-by-night traveling agents, which have caused the doctors to regard anyone that seeks to introduce any medicine to him as a pest to be dreaded worse than the uncinariasis.

There is no limit to the possibility of this work. A small medical journal could be published for the members of our Association for distribution to the medical profession.

One subject could be taken up at a time for example: one number could be devoted to the preparations of iron. After giving the history of all of the well known proprietary preparations, pepto-mangan, etc., show how they become "patent" medicine, and then follow up by the formulas of official and extra official similar preparations.

But this is not all that constitutes the post-graduate course of the A. Ph. A.

The medical associations have entered a comprehensive program. It means the education of the public all along the line of health, hygiene and sanitation, it comprises the at present burning question of pure food and drugs, as well.

The medical association, through its representatives, which cover the continent from the Atlantic to the Pacific, and its great organ, The Journal of the American Medical Association, have become a systematic propaganda, in which it is desired to enlist four classes to aid and co-operate with them, namely, first, the *real* pharmacist; second, the preacher; third, the lawyer and politician; and fourth, the journalist.

It will be observed that in these forces which make in all that stand for better food, purer drugs, better living, and more satisfactory environments, the real pharmacist comes first, and that is simply synonymous with the membership in the A. Ph. A.

This is the post-graduate course which we offer to this Association. It has the great advantage of already having a good start. There is nothing to prevent the course opening this fall when other courses in the regular schools are opening.

The fee is comparatively small, represented by the payment of the annual dues for membership in the A. Ph. A.

There is no requirement for admission, except as covered in the Constitution and By-Laws.

After you have been duly elected a member of the A. Ph. A., and are heart and soul in this movement, it is expected that you will begin to help in the reformation of the materia medica, and aid the physicians in escaping the thraldom of the proprietary medicine interests, while resuming your old-time and honored position as a preparer and compounder of drugs and medicines.

The same privilege was extended to Mr. Lowe, who read the following paper on store experience:

STORE EXPERIENCE.

BY CLEMENT B. LOWE.

Among the questions proving vexatious to colleges of pharmacy for some years past has been that of drug-store experience. There has been a division upon the question; a number of the colleges (principally those affiliated with universities) have abandoned the requirement that their graduates shall have had a certain amount of store experience before receiving the degree of "graduate in pharmacy." Other colleges, largely those situated in the eastern States, have still insisted upon this requirement, and have compelled their candidates for graduation to furnish reliable evidence that they have had such an experience. Recently the former party has had the addition to their ranks of the New York College of Pharmacy, possibly owing to the pressure of the educational requirements of their State, the bars being raised in the direction of entrance examination and lowered in that of age necessary to graduation and practical experience. In presenting this subject it is but fair to state the reason which it is claimed has influenced such colleges as do not require experience as a prerequisite to graduation. I believe it is asserted that inasmuch as it is difficult at the present time to determine the value of the store experience, therefore it is wiser to take the other horn of the dilemma and not certify to it at all. In the case of those institutions which do not require experience their diploma is not longer an evidence that its possessor is qualified to practice pharmacy, but it is simply an evidence that its possessor has taken certain courses of study and passed the subsequent examinations. Looking at the question from my standpoint this seems to me to be a vital mistake. I am willing to grant that conditions have changed, that the days of the old-fashioned apprenticeship have passed and that possibly some apothecaries do not take the strong personal interest in their students that was taken fifty years ago, but I am not willing to grant that valuable drug-store experience cannot be had at the present time, in fact to grant it, would be to practically assert that few drug stores are carried on at the present time as they should be. I am absolutely sure from my own personal experience that in my own city and surrounding territory there are many stores that can and do give a young man an excellent practical experience, an experience which proves an invaluable possession in his after life. Possibly it may be wise for me to state, First: What I consider such an experience to consist of. Second: Why I consider it of value. Third: What I consider the best time for its acquisition.

First. A proper experience consists of the training acquired by the daily doing of those things which are afterwards to constitutute our life work. Our cerebral gray matter is so constituted that every time we perform an action it makes it easier to do it the next time. Folding powders which looks so easy to the novice when he sees it done by the trained dispenser, requires a certain co-ordination of the muscles which can only be gained by much practice. He may have been taught the theory of powder-folding by the laboratory instructor, and under his guidance practiced the art to a limited extent, but that is entirely different from doing it day after day, and doing it not only well, but doing it rapidly under pressure of actual business.

Secondly. I consider such an experience of value because there are many things to be learned by actual experience which at the present time are not taught in Colleges of Pharmacy. I have not yet heard of the institution by any college, of a chair of bottle-washing, and yet I venture to say that much valuable experience can be learned at the drug-store sink. A bright boy will learn that soap is of no value in cleansing a graduate that has contained Liq. Plumbi Subacetatis, in fact, it only adds to the trouble, but that acetic acid will remove the deposit at once. In cleansing lime-water bottles, water (as our customers tell us) is of no value, but the boy learns that hydrochloric acid is just the thing. In speaking of this subject in the presence of an apothecary who has gained both reputation and fortune, he said, "not a little chemistry can be learned at the drug-store sink." Could any lectures on bottle-washing, or the practicing of it a few times in a laboratory equal in value the experience which is daily and hourly to be acquired in a drug store? Take for instance the reading of prescriptions; most every college of pharmacy is in possession of large numbers of copies of prescriptions which are quite valuable for purposes of instruction, but they do not take the place of the training and intuition which can only be acquired by an actual extensive prescription compounding. Another thing which is almost indispensable to success is a knowledge of the tactful manner of treating customers. Is there any better place for learning this than the drug store? Actual business also teaches a young man the different styles and qualities of merchandise. That this knowledge is considered essential is evidenced by the fact that the dean of a prominent western college of pharmacy advocated the acquisition by colleges of pharmacy of a line of sundries and rubber goods for the instruction of the students. A young man who has had a good store experience has probably learned all this before coming to college.

Thirdly. Which is the best time for the acquisition of the store experience, because, colleges of pharmacy to the contrary, such an experience is still considered an indispensable prerequisite to examination by most of the state pharmaceutical examining boards. A young man, a graduate of a prominent college of pharmacy, was recently refused examination by a state examining board because he had not the required experience, or in fact, any experience. Personally I consider it of the greatest value to have had part of this experience before entering college, a good experience of two or more years will be of great assistance in understanding the college instruction; in fact, I do not see how a student can get out of his course all that he should, unless he has had such an experience. The remainder of his experience can be had simultaneously with his college instruction. I cannot conceive under any circumstances that the best time for obtaining this experience is after graduation. Many of the more menial things which a beginner in a store would not hesitate to do, will be distasteful to a graduate and beneath his notice. In addition he will find himself as previously indicated occupying an anomalous position, he has hitched his cart in front of his horse, and must await the completion of his store experience, before he can come up before an examining board for examination and registration, and the privilege of entering into business on his own account.

It may be treading on dangerous ground to state an additional reason, and yet I have wondered sometimes whether one of the reasons why store experience is not more highly valued by some college professors may not be the fact that many of them have had so little store experience of their own, and that which they have had, has been so early in their career that its influence has greatly waned. There is also a strong tendency on the part of each professor to put a high value on his own teaching and to consider it a "sine qua non."

An interesting question which might be asked about it, is, what does the pharmaceutical world think about this matter. I am convinced that the great majority of it is in favor of a thorough pharmaceutical training, and that the proper time for acquiring this training is previous to graduation.

Mr. William Kaemmerer, of Columbus, O., was given three minutes to present the substance of a paper he had prepared, entitled, "Something to Think About," the Chair stating that there were seven or eight papers whose authors were present, or most of them, and it would take an hour to consider them all. Mr. Kaemmerer said he could not present his paper in so short a space of time, but would read until his time was out. This he did. Mr. Hallberg stated that the gist of the unfinished part of Mr. Kaemmerer's paper was to the effect that the way to better the condition of the pharmacists of this country was to better the condition of the clerks; that as things now stood it could not be expected to get the better class of youths to enter the profession of pharmacy, as the inducements were not sufficient.

The Chair expressed the appreciation of the Section at receiving such a paper from Mr. Kaemmerer, with regret for the limited time he had to present it. He was glad Mr. Hallberg had given the gist of the unfinished portion of the paper.

The text of the paper here follows:

SOMETHING TO THINK ABOUT.

BY WILLIAM F. KAEMMERER.

It is my purpose in this article so give a retail drug clerk's view as to how the business of the retail druggist may be placed on a higher plane and how the pharmacist may become a more respected member of the community.

Before proceeding I wish to make a few statements which must be borne in mind in considering that which is to follow.

Much of what I shall have to say, although not all of it, will be that of my own personal experience. Where the conditions of employment here described are more unsatisfactory than those which obtain in some localities, you will find that there are still other localities where the conditions are still worse. I will also, of necessity, deal with purely local conditions, but I am of the opinion that they do not differ greatly from those which are experienced by druggists and their clerks in most of our larger cities. While some of the changes proposed may seem radical and impossible of being carried out, they are not as radical nor as impossible as seemed those other reforms which have in recent years taken place in other walks of life, and to which the public has most readily and completely adjusted itself. Finally, please remember that they are expressions and opinions of a retail drug clerk.

THE FUTURE PHARMACIST.

Who is he to be, and what kind of a pharmacist will he be? Is it not true that we expect the retail drug clerk of the present to become the pharmacist of the near future?

What kind of a pharmacist will he be? He will be just such a pharmacist as one might expect him to become under the present conditions of employment. Are these conditions such as to make of him a better pharmacist than the average retail druggist of to-day? Are they such as will bring out the very best there is in the clerk and make of him an ideal pharmacist such as we all hope some day to see? Decidedly not.

Much is being done and has been done to aid the drug clerk to acquire a pharmaceutical education. Legislation has also been a help to him in shutting out a certain kind of competition.

Education and legislation are all very well as far as they go, but they alone will not make of us better pharmacists. Something else is needed. Something that has been almost entirely overlooked. Almost nothing has been done to improve the conditions of the drug clerk as to hours of service and salary.

All about us we see employees getting shorter hours and better pay. Why cannot we also have at least shorter hours? Unless we are accorded fairer treatment you cannot expect us to become better pharmacists. You take all the ambition out of us.

What is expected of the drug clerk of to-day? He is expected to come to work at seven o'clock in the morning and work until ten p. m. He must do this nearly every day except Saturday, when he is privileged to work until eleven p. m. or later; every other Sunday he has a day off; he is expected, however, on that day to relieve the proprietor or clerk in charge at meal time. During the week he also gets just one evening off, and he is fortunate if on that evening he can get away at six o'clock or six thirty. He gives his employer on an average, eighty-three and a half solid hours of service every week. He is expected to keep himself busy all of the time that he is on duty, and to always keep one eye on the front part of the store.

A young man who puts in that many hours of service, especially if he is a college man, must certainly receive a magnificent salary. He gets from fifty to one hundred and twenty-five dollars a month, very rarely the latter, and only in a few instances does he get a hundred dollars a month. He is also discriminated against by being paid by the month instead of by the week. Where he is supposed to get fifteen dollars a week, he receives only sixty dollars a month. This may seem like a small matter, but in the course of three or four years it amounts to a nice little sum. Proprietors of other stores do not take advantage of their clerks in that way, and why should druggists be permitted to do so? It is unfair.

The drug clerk is expected to be a college graduate and to keep himself fairly well posted. When he engages for work what does he find? In the majority of cases he finds out that the quicker he can forget that he ever saw the inside of a college or school of pharmacy, the better are his chances of holding his position. In about three-fourths of the drug stores the clerk is expected to take a hand in the work which in other stores is done by the porter, and also to wait on the soda trade.

He finds that he must do and know many things which were never taught him at college. He must be a hustler and work hard and long. Many things that were taught him at college he apparently has no use for, and for want of practice and for lack of time to read up, he very soon forgets.

Please do not make the mistake and think for one moment that I am opposed to college education, or that I regret having taken such a course. I will admit that there was a time, shortly after graduating, that I was disappointed, and regretted the time and hard-earned money it had cost me. I believe every college man has had that same feeling shortly after graduating, but as the years roll on and he takes up his task, either as clerk or as proprietor, he finds himself possessed of something that is of far more value than any financial consideration ever can be—a keen enjoyment and a real genuine pleasure in his every-day work, so that it is no longer work, but has become play instead.

I would ask you to help bring about more favorable conditions, in order that we may have a little more time to improve ourselves, so that we will not retrogress.

The drug clerk who is expected to be on duty at seven in the morning must get up at six, and if he works till ten at night and expects to get up at six in the morning, he must go to bed just as soon as he can get home. When can such a clerk find time to keep himself posted? How is he ever going to improve himself so that he can be of more value to you? He cannot improve himself under these conditions; the chances are that he will rapidly lose ground.

Supposing he is a married man, what time can he devote to his family? Right here I wish to call attention to the short-sighted policy most generally pursued by retail druggists towards their clerks.

In order that we clerks can enjoy, to some extent, that which we all hold dear in life, you virtually compel us to start in business for ourselves and become your business competitors. Why won't you treat us fairly? Let us be your closest friends: give us shorter hours and a fair salary so that we can afford to stay with you and help you build up a business that is worth having and that you can be proud of.

There are so many druggists who are all for themselves and who care very little for pharmacy as a profession. They take little heed as to what effect their acts may have upon their clerks or other druggists so long as they can make money. If pharmacy is to be placed on a higher plane, druggists must show more consideration for their clerks and display a kindlier and more brotherly feeling towards each other.

Any clerk who objects to working long hours and on Sundays and other holidays is given the cheerful advice to seek employment in some other business. That is the cause of most of our troubles to-day. Owing to these very conditions and this spirit, thousands of good young men have deserted pharmacy for some other profession or business. Many of them were valuable men, college graduates, whom pharmacy could ill afford to loss. Many a good drug clerk has left the retail drug business to take up some other calling where conditions are not so hard. Good drug clerks will continue to leave the drug business as long as the present conditions are allowed to continue.

How long are you going to compel desirable young man to leave pharmacy? How long can you afford to do so? What is to become of pharmacy as a profession, if this is allowed to go on?

Wherever necessary our pharmacy laws should be changed so as to compel every drug store to be at *all* times under the *direct* supervision and management of a properly qualified and legally registered pharmacist. In many of our states the pharmacy laws would not need to be changed. All that it would be necessary to do in order to obtain practically the same result would be to enforce the pharmacy law to the letter. This would mean that both the proprietor and his chief clerk must both be registered pharmacists, and where the proprietor himself is not a registered pharmacist, he must employ two registered pharmacists. Under present conditions the public is not getting that protection which it has a right to expect. We owe it to ourselves and to the medical profession to give them that protection. This would also materially decrease the number of drug stores, and make it more difficult to start new ones, thus decreasing competition.

Aside from the elevating influence this would have on pharmacy, it would also make drug clerks very scarce. That is one of the objects I have in view in proposing this measure.

In order to supply this deficiency, I entertain great hopes that it will cause druggists to make most liberal concessions in the way of shorter hours and more salary; and induce a large number of valuable men who have left the drug business for other fields of usefulness to again take up pharmacy.

I have been told that we are not prepared to take such a step at this time. When will we be ready for such a step? Will it be in five, ten or twenty years? We are just as well prepared for such a step now as we will be in twenty years from now. In twenty years from now you will offer the same excuses which you are ready to offer now. Now is the time for at least some of our more advanced states to make a beginning.

The bulk of the revenue of the Board of Pharmacy is supplied by the clerks and, as it is the clerks who are to be the future pharmacists, and who are most vitally interested, they should have some voice in the affairs of the Board of Pharmacy; they are entitled to have a representative member. He need not necessarily be one of their own number, but should be some one of their choice.

I would like here to direct attention to proposition number two, that will come up for discussion before the Joint Conference of the Boards and Faculties, and which calls for an age limit of seventeen years, and a preliminary education of one year's completed high school work, or its educational equivalent as the prerequisites to an apprenticeship demanded by the laws. Personally I approve of this recommendation. But do you really believe that a young man seventeen years of age, who has completed one year's high school work, is going to take up a pharmaceutical apprenticeship with these long hours and poor reward staring him in the face? I do not believe you will be able to get him. Young America has too many other favorable opportunities open to him. If we expect such young men to take up pharmacy, we must have a shorter work-day and a reasonable observance of all holidays.

Is it absolutely necessary for druggists to keep such ungodly long hours and to work all day on holidays when other people are enjoying themselves?

Just for one moment cast aside all selfish considerations and tell me honestly, do you really believe, that is, after due notice to the public, any real genuine hardship and suffering would be caused if all drug stores, both large and small, were to observe the following hours: Every week day except Saturday, open at 7 : 30 a. m. and close at 9 p. m.; Saturdays, open at 7 : 30 a. m. and close at 11 p. m.; Sundays, close all day except from 9 to 11 a. m. and from 4 to 6 : 30 p. m.; on all other holidays, close at 12 noon and open again in the evening from 7 to 8; Sunday sales and sales in the evening on other holidays to be confined as much as possible to necessities.

Whenever I mention shorter hours to a druggist he always raises a cry about hurting his prescription business, and that physicians would be induced, more than ever before, to dispense their own medicines. I take no stock whatever in such talk. I think reputable physicians all have their fill of dispensing their own medicines; it has its serious drawbacks, and they realize it. In my own home city we have two stores that do some wholesale business and also a very large retail and prescription business. One of them closes every week day at 6 p. m. except Saturday, when they close at 9 p. m; Sundays they are open only a few hours to supply necessities. The other store has for the past forty years or more closed every week day at 8 :30 p. m., except Saturdays, when they close an hour or an hour and a half later. Sundays they are closed tight all day, and on all other holidays they close at noon for the balance of the day. Both these stores are very prosperous and either of them easily do more prescription business than any one of the other stores. Talk about shorter hours hurting the prescription business; I think it has no foundation in fact.

Can we bring about an observance of such hours as I have proposed? I think we can. It cannot be done in one month, nor in one year, but it can be done just the same. How is it to be done? Just in the same way that other retail merchants and their clerks have been enabled to obtain a shorter work-day.

This means organization on the part of the clerks and proprietors into two separate bodies. The clerks must make the first move. It has been estimated that there are eighty thousand retail drug-clerks in the United States.

How long shorter hours in the retail drug business are to be delayed depends entirely upon how long these eighty thousand retail drug-clerks can be dissuaded from organizing,

I am aware that to most of you the very idea of having a drug clerks' union is distasteful, but the present situation has become so unbearable that I cannot be censured for suggesting such a course in my efforts to find some measure of relief; especially so when I can look about me and see how other employees have, through organization, obtained relief from intolerable conditions.

Secretary England, at request of the Chair, briefly extracted a paper by Mr. Beal on the subject of an A. Ph. A. anti-narcotic law, which he stated contained a recommendation requiring action. The following is the text of the paper:

THE A. PH. A. ANTI-NARCOTIC MODEL.

BY J. H. BEAL.

On December 27th and 28th, 1905, representatives of the American Pharmaceutical Association, of which the writer was one, of the National Association of Retail Druggists, the National Wholesale Druggists' Association, and the Proprietary Association of America, met at the Hotel Stratford, in Chicago, to take into consideration the question of legislation to lessen the evils due to the improper sale of narcotic drugs, and also the sale of proprietary medicinal compounds containing alcohol.

After a consideration of various draughts of proposed laws regulating the sale of narcotic drugs, the A. Ph. A. Anti-Narcotic Law Model adopted by this Association at its meeting in Kansas City was finally settled upon as the most satisfactory form of law, and various amendments were made therein. In addition to several slight verbal changes the amendments which the conference adopted are as follows:

The amounts of certain drugs permissible in medicines not sold on prescriptions were increased as follows: morphine and heroine to ¼ grain, alpha and beta eucaine to ⅛ grain, and chloral hydrate to 10 grains, in the fluid or avoirdupois ounce. Dover's powder was also introduced into the lists of drugs which may be sold without a prescription.

It is also provided that upon a conviction for a third offense under the law, the license of the offender, whether druggist, dentist, physician or veterinarian shall be revoked.

It is made the duty of the Board of Pharmacy to prosecute all persons guilty of a violation of the provisions of this act, but before they may bring any prosecution for the sale of proprietary preparations containing more than the specified amount of the narcotics named in the draught, they shall first cause the same to be examined and to certify to the presence of an excess of such narcotic drugs.

In the opinion of the writer the draught is improved by the changes made, and it is hereby recommended that it be adopted in its present form as the Anti-Narcotic Law Model of this Association.

The draught in its present form is given below.

A Bill

To Provide Against the Evils Resulting From the Traffic in Certain Narcotic Drugs, and to Regulate the Sale Thereof.

Be it Enacted by the General Assembly of the State of ———.

SECTION 1. That it shall be unlawful for any person, firm or corporation to sell, furnish or give away any cocaine, alpha or beta eucaine, opium, morphine, heroine, chloral hydrate, or any salt or compound of any of the foregoing substances, or any preparation or compound containing any of the foregoing substances, or their salts or compounds, except upon the original written order or prescription of a lawfully authorized practitioner of medicine, dentistry or veterinary medicine, which order or prescription shall be dated and shall contain the name of the person for whom prescribed, or if ordered by a practitioner of veterinary medicine shall state the kind of animal for which ordered, and shall be signed by the person giving the prescription or order. Such written order or prescription shall be permanently retained on file by the person, firm or corporation who shall compound or dispense the articles ordered or prescribed, and it shall not be again compounded or dispensed, except upon the written order of the original prescriber for each and every subsequent compounding or dispensing. No copy or duplicate of such written order or prescription shall be made or delivered to any person, but the original shall at all times be open to inspection by the prescriber and properly authorized officers of the law.

Provided, however, that the above provisions shall not apply to preparations containing not more than two grains of opium or not more than one-fourth grain of morphine, or not more than one-fourth grain of heroine, or not more than one-eighth grain of cocaine, or not more than one-eighth grain of alpha or beta eucaine, or not more than ten grains of chloral hydrate, in one fluid-ounce, or if a solid preparation, in one avoirdupois ounce.

Provided, also, that the above provisions shall not apply to preparations containing opium and recommended and sold in good faith for diarrhœa and cholera, each bottle or package of which is accompanied by specific directions for use, and a caution against habitual use, nor to powder of ipecac and opium, commonly known as Dover's Powder, nor to liniments or ointments when plainly labeled "for external use only." And provided further that the above provision shall not apply to sales at wholesale by jobbers, wholesalers and manufacturers to retail druggists or qualified physicians, or to each other, nor to sales at retail by retail druggists to regular practitioners of medicine, dentistry or veterinary medicine, nor to sales made to manufacturers of proprietary or pharmaceutical preparations for use in the manufacture of such preparations, nor to sales to hospitals, colleges, scientific or public institutions.

SEC. 2. It shall be unlawful for any practitioner of medicine, dentistry or veterinary medicine to furnish to or to prescribe for the use of any habitual user of the same any cocaine, heroine, alpha or beta eucaine, opium, morphine, chloral hydrate, or any salt or compound of any of the foregoing substances, or any preparation containing any of the foregoing substances or their salts or compounds. And it shall also be unlawful for any practitioner of dentistry to prescribe any of the foregoing substances for any person not under his treatment in the regular practice of his profession, or for any practitioner of veterinary medicine to prescribe any of the foregoing substances for the use of any human being.

Provided, however, that the provisions of this section shall not be construed to prevent any lawfully authorized practitioner of medicine from furnishing or prescribing in good faith for the use of any habitual user of narcotic drugs who is under his professional care such substances as he may deem necessary for their treatment, when such prescriptions are not given or substances furnished for the purpose of evading the provisions of this act.

SEC. 3. Any person who shall violate any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction for the first offense shall be fined not less than $25.00 nor more more than $50.00, and upon conviction for a second offense shall be fined not less than $50.00 nor more than $100.00, and upon conviction for a subsequent offense shall be fined not less than $100.00 nor more than $200.00, and shall be imprisoned in the county jail for not more than six months, and if a licensed pharmacist, physician, dentist or veterinary surgeon, his license shall be revoked. It shall be the duty under this act of all judges of the courts of common pleas in this State, at every regular term thereof, to charge all regularly impaneled grand juries to diligently inquire into and investigate all cases of the violation of the provisions of this act and to make a true presentment of all persons guilty of such violations. It shall be the duty of the Board of Pharmacy to cause the prosecution of all persons violating the provisions of this act. No prosecution shall be brought for the sale of any patent or proprietary medicine containing any of the drugs or preparations hereinbefore mentioned until the Board of Pharmacy shall certify that such medicine contains any of the said drugs or preparations in excess of the maximum percentages hereinbefore mentioned.

SEC. 4. In any proceedings under the provisions of this act the charge may be brought against any or all of the members of a partnership, or against the directors or executive officers of a corporation, or against the agent of any person, partnership or corporation.

SEC. 5. All laws and parts of laws in conflict with this act are hereby repealed.

SEC. 6. This act shall take effect and be in force from and after the .... day of ...., 19...

Mr. Sayre moved to receive, and that the recommendation be referred to the general session. This motion was seconded by Mr. Hallberg and carried.

Mr. Mayo moved the following:

That the Chairman of the Section appoint a committee of three, to appear before the Pure Food and Drug Commission at its hearings to be held in the city of New York from September 17th to 23d, and present a brief covering the points of interest to the retail druggists.

Mr. Rapelye seconded the motion, and it was adopted.

The General Secretary called attention to the fact that the last fifteen lines of the paper by Mr. Lowe on "Store Experience" referred alone to the Philadelphia College of Pharmacy and had nothing to do with his subject, and, besides, was matter of a character that the Association several years ago had ruled should not be allowed in papers, and moved to strike out this matter. The motion was seconded by Mr. Sayre and adopted.

The following papers were read by title and referred for publication:

Correspondence Courses in Pharmacy, by J. H. Beal.

A Synopsis of the Pure Food and Drug Law, by J. H. Beal.

The Legal Recognition of the U. S. P., by J. W. England.

Attitude of the Drug Trade to Patent Medicine Legislation, by Harry B. Mason.

Said papers here follow:

CORRESPONDENCE COURSES IN PHARMACY.

BY J. H. BEAL.

Within the past decade there has been a great development in the system of education by correspondence, or what is more commonly known as "Home Study Courses." Almost every branch of learning is now taught or attempted to be taught by this method, and as might have been expected pharmacy has its fair share, perhaps more than its fair share, of institutions of this kind, of varying degrees of goodness or badness. Some of these are conducted under the auspices of regular teaching colleges of pharmacy, some are carried on by pharmaceutical journals, and some, it is suspected, by drug clerks temporarily out of employment.

On the whole the system has perhaps accomplished much good, some of the institutions certainly have, but of late there is to be noted what can only be regarded as an unfortunate tendency on the part of the authorities in charge of these courses to boldly advocate them as perfect substitutes for attendance upon the regular pharmaceutical curriculum as presented in a good college of pharmacy.

Without going into the question as to whether a good correspondence course may or may not be of more value than a course at a poor college of pharmacy, it is safe to assert that the best course of home study ever devised cannot be the equal in educational value to the systematic pursuit of the regular pharmaceutical curriculum as presented at even a fairly good college. There is no substitute for the presence and voice of the living teacher, no equivalent for actual work in the laboratory, no incentive to study like the stimulus of personal contact with a class of fellow students; and those who claim that a university education can be sent in a mail bag are guilty of asserting the thing that is not.

The writer has been convinced by observation that many of those who subscribe for a mail course do so, not merely because it is cheaper, but because they think this an easier method of gaining an education than by the old method of college attendance. It is scarcely necessary for me to tell a company of experienced teachers that this is very far off from the truth. It is a much more difficult feat, and requires the exercise of a much stronger degree of will-power to carry on a consecutive line of study in the quiet of one's room for a period of six to nine months, than to carry a daily assignment of tasks in company with a class of enthusiastic fellow students, and under the direction of competent instructors present in person.

In a regular college of pharmacy probably 90 per cent. of matriculants are successful in graduating, while in the case of a correspondence course, unless it be nearly a pure farce, probably less than 20 per cent. persevere to the end.

While it is true that the student by home study may gain a large amount of valuable information, it will be through a far greater expenditure of time and energy than would be required at a college of pharmacy.

The American Pharmaceutical Association has in a very effective manner acted as the conservator of the means of pharmaceutical education in the United States, and as such can not ignore the existence of Home Study Courses, nor without stultification suffer to pass unchallenged the claim that these agencies are fully able to impart the equipment which the pharmacist must possess in order to meet successfully the demands of the twentieth century. In so far as these agencies have honestly striven to raise the standard of education among drug-clerks and to promote habits of study and self-help, they should have our commendation; but any proposition or suggestion to the effect that any course of instruction by mail, is or can be made to be the equivalent of a residence course of instruction at a respectable college of pharmacy is false absolutely, and stamps those who make such claims as guilty of misrepresentation and attempted fraud. Upon such as these this Association can not do otherwise than set the brand of its stern disapproval.

A SYNOPSIS, WITH COMMENTS, OF THE PRINCIPAL PROVISIONS OF THE FEDERAL PURE FOOD AND DRUG LAW.*

BY J. H. BEAL.

The recently enacted United States law relating to the adulteration and misbranding of foods, drugs, and liquors, is probably the most important and far-reaching example of federal legislation placed upon the statute books since the period immediately following the Civil War. At present it is scarcely possible to estimate its ultimate effects upon interstate commerce and trade usages, but they are certain to be immense, and it behooves all who are engaged in the manufacture, transportation or sale of any of the class of articles which come within its purview to carefully study its provisions and to observe closely the interpretations placed upon them by those who are charged with their enforcement.

The measure has been criticized on the ground that it is complicated, and contains some real or apparent inconsistencies; but it could scarcely be expected to be otherwise, in view of the vast extent and complication of the subject-matter with which it deals, and the practical necessity of attempting to compromise between the widely-separated and irreconcilable views of its advocates and opponents.

The purpose of this paper is to present an outline of the act in untechnical language, and as free as may be from the "vain repetitions" which seem to be inseparable from statutory phraseology. In some instances the exact text of the law is quoted; in others a concise statement is given of the intent of its sections, as the writer understands them; but as courts are frequently able to extract from the language of statutes meanings which even their authors did not know them to contain, the writer does not warrant that his conclusions will invariably be sustained by the judicial interpretation of its various provisions.

If, as seems probable, the act as a whole is held to be constitutionally valid, we may anticipate that the Congress will be called upon to pass curative legislation, limiting and defining certain points which at present are indefinite or obscure, and that a decade at least of judicial consideration will be required before its interpretation can be regarded as settled beyond the possibility of dispute.

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* The author's comments appear enclosed in parentheses.—*The Gen'l Sec'y.*

The text of the act used in the preparation of the present paper is that appearing in *Science* for August 10, 1906, and is therefore presumably correct.

Section I makes it unlawful to manufacture within any territory or within the District of Columbia any article of food or drug which is adulterated or misbranded within the meaning of the law.

Penalty for first offense $500.00 fine, or one year's imprisonment, or both; for subsequent offenses $1,000.00 fine, or one year's imprisonment, or both.

Section II makes it unlawful to introduce into any state, territory or the District of Columbia, or to ship or to deliver for shipment to any state, territory, or foreign country, or the District of Columbia, or to receive from any state, territory, or foreign country, or the District of Columbia, and having so received, to deliver or offer to deliver, in "original, unbroken packages," any adulterated or misbranded goods, or to sell or offer for sale in the District of Columbia or any of the territories, or to export or offer to export to any foreign country, any such adulterated or misbranded articles. Penalty for the first offense $200.00 fine, for subsequent offenses $300.00 fine, or one year's imprisonment, or both.

Provided, That articles intended for export to foreign countries are not to be deemed adulterated or misbranded if they comply with the laws of such foreign countries.

(By comparing the language of the two foregoing sections it will be observed that within the Territories and District of Columbia the law prohibits the manufacture and sale as well as the transportation of adulterated or misbranded articles, but as between the States the law does not attach until the article becomes, either in fact or by intention, the subject of interstate or foreign commerce.) See Coe *v.* Errol, 6 Supreme Court Rep., 477, and U. S. *v.* Boyer, 85 Fed. Rep., 425.

(This difference is not the result of congressional oversight, but arises from the well-recognized difference in the nature of the powers possessed by the Federal Government and by the several State governments. The powers of the several States are original and not delegated powers, and their legislatures have exclusive jurisdiction over all subjects not expressly or by plain implication forbidden to them by their own constitutions or by the Constitution of the United States. On the other hand, the Federal Government is one of delegated powers only, and the Congress may legislate only upon such subjects as have been expressly delegated to it by the Federal Constitution, or which arise by fair implication out of the powers expressly delegated.)

(For example, the Congress may prescribe the character which petroleum must possess before it may be shipped from one State to another, but when it has once passed within the limits of a State and has been withdrawn from the original package, its subsequent regulation and control passes to the State authority, and the authority of the Federal Government ceases.) U. S. *v.* DeWitt, 9 Wall, 41.

(As regards the District of Columbia, and territories not yet erected into States, the Congress has exclusive power over internal affairs as well as over matters of interstate commerce.)

(By the second section, also, dealers in the States are liable for the sale in "original unbroken packages" of adulterated or misbranded articles received from without the State. In the next section reference is made to goods offered for sale in "unbroken packages" when received from without the State. In section eight, relating to misbranding, the word "package" is used without qualifying adjectives. The meaning of "package" in its several connections is therefore of vital importance in the interpretation of the act. A brief discussion of the subject is given under section eight.)

Section III provides that the secretaries, respectively, of the Treasury, Agriculture, and of Commerce and Labor, shall make uniform rules and regulations for executing the law, including the selection and examination of specimens manufactured or offered for sale in any territory or the District of Columbia, or offered for sale in unbroken packages in any other state than that in which they are manufactured or produced, or which have been received from any foreign country, or which are intended for shipment to any foreign country, or which may be submitted for examination by the chief health, food or drug officer of any State, Territory, or District of Columbia, or at any domestic or foreign port through which such articles may enter interstate or foreign commerce.

(Some fear has been expressed lest the rules and regulations provided for in this section should be harsh and oppressive, but for this there is no present cause. Aside from the inherent improbability that the high executive officers entrusted with the execution of the law would adopt any arbitrary or unnecessary regulations, it should be remembered that although the practical effect of the law may be materially modified by the *manner* of its enforcement, the officers concerned cannot legally change the intent or extent of application of its least provision, and should they do so, the courts would declare such assumption of power null and void.)

Section IV provides that the examination of specimens shall be made in the Bureau of Chemistry of the Department of Agriculture, or under the direction or supervision of such bureau.

If the specimens are found to be adulterated or misbranded, the Secretary of Agriculture shall give notice to the offending persons who are entitled to a hearing. If on hearing it appears that the act has been violated, the facts are certified to the U. S. District Attorney of the proper district for prosecution.

After judgment of the court notice of the facts shall be given by publication in the manner prescribed by the rules and regulations provided therefor.

(The object of giving a hearing to the parties after the finding of the chemist and before prosecution is doubtless intended to afford the Secretary of Agriculture opportunity for the exercise of his official discretion as to whether the case shall be pressed or dropped. This will enable him to make a distinction between offenses which are merely technical or immaterial and those which are material or wilful, and seems an eminently wise and just provision.)

(So also, the provision that publication of the facts shall be withheld until after judgment by the court greatly lessens the chances of injury to legitimate business by the publication of an unfounded accusation, and is equally commendable.)

Section V makes it the duty of the U. S. District Attorney to prosecute on direction of the Secretary of Agriculture, or on presentment to him of satisfactory evidence of the violation of the law, by any health, food or drug officer of any State, Territory, or the District of Columbia.

Section VI defines drugs as "all medicines or preparations recognized in the United States Pharmacopœia or National Formulary, for internal or external use, and any substance or mixture of substances intended to be used for the cure, mitigation or prevention of disease of either man or other animals."

(The use of the titles "United States Pharmacopœia" and "National Formulary" in this definition of a drug is not clearly apparent, since the latter half of the definition, "and any substance or mixture of substances intended to be used for the cure, mitigation, or prevention of disease of either man or other animals," is broad enough to include not only Pharmacopœial and National Formulary substances, but practically everything else "that is in heaven above, or that is in the earth beneath, or that is in the waters under the earth.")

(The naming of the Pharmacopœia and National Formulary must be viewed, therefore, as a tub cast to the pharmaceutical whale, and not as either limiting or extending the scope of the definition, for it evidently does neither.)

Foods are defined as "all articles used for food, drink, confectionery or condiment, by men or other animals, whether simple, mixed or compound."

(The only portion of this definition which calls for comment is the peculiarity of construction which seems to make the law exhibit a tender solicitude for the welfare of "mixed and compound" animals!)

Section VII defines adulteration to be:

In the case of *Drugs:* 1st, If, "when sold under or by a name recognized in the U. S. Pharmacopœia or National Formulary, it differs from the standards of strength, ability or purity as determined by the test laid down in the Pharmacopœia or Formulary official at the time of investigation."

Provided, however, that no such drug shall be deemed to be adulterated if its strength, quality or purity be plainly stated on the container, even though it differs from the standard of the Pharmacopœia or Formulary.

2d. If the strength or purity fall below the professed standard under which it is sold.

(These attempted definitions raise several important questions, some of which are not easily answered.)

(The first and most noteworthy feature of this section is the evident attempt to make each new revision of the Pharmacopœia or Formulary automatically displace the preceding edition as the standard by which the quality and strength of the drugs is to be measured. Is this possible? It is a principle of American jurisprudence, long and clearly recognized, that a legislature cannot delegate its lawmaking powers to another body. But such a delegation of legislative powers is precisely what is sought to be accomplished by the language, "The United States Pharmacopœia or National Formulary official at the time of investigation?)

(The Pharmacopœia is framed by a Revision Committee elected every ten years by a voluntary association of physicians and pharmacists: the National Formulary is the property of the American Pharmaceutical Association, and may be revised as frequently as that Association deems advisable. According to the language of the statute, these two voluntary associations would have the power to make and unmake, at pleasure, a large and important part of the law of the land, and by a new revision of their respective books make every manufacturer of drugs for interstate commerce a criminal, simply by changing the standard by which the quality of his goods is to be determined!)

(In the State of Ohio we have a decision from the Supreme Court upon this particular point, in the case known as The State of Ohio *v.* Emery, 55 O. S., 364, in which it was sought to convict a merchant for selling an article which did not conform to the Pharmacopœia of 1890, although it did conform to that of 1880, the edition which was in force at the time the statute was enacted.)

(The Court says: "The reference in the statute to the United States Pharmacopœia could be to no other than the edition of the book in use and recognized when the statute went into effect. . . . It is not to be supposed that the legislature intended to adopt, by reference, as part of the penal law of the State, an edition of the book not then in existence, and of the contents of which the legislature could then have had no knowledge. . . . A sale could not be rendered unlawful because it is below a higher standard laid down in a subsequently revised edition of the book. . . . To hold that the sale could be thus made unlawful, would be equivalent to holding that the revisers of the book could create and define the offence, a power which belongs to the legislative body only, and which cannot be delegated.")

(The position that the United States courts would probably take is indicated by the decision in the case of The United States *v.* Eaton, 144 U. S., 677. In this case it was sought to convict the defendant Eaton for failure to keep a record showing his receipts and sales of oleomargarine, as required by the regulations of the Commissioner of Internal Revenue and the Secretary of the Treasury, who were expressly authorized by law to make such regulations. In the opinion delivered by Justice Blatchford, and in which the decision was in favor of the defendant, it is clearly pointed out as a well-recognized principle of constitutional law that "an offence which may be the subject of criminal procedure is an act committed or omitted in violation of a public law either forbidding or commanding it," and also, "that it would be a very dangerous principle to hold that a thing prescribed by the Commissioner of Internal Revenue as a useful regulation . . . should be considered as a thing required by law . . . in such a manner as to become a criminal offence.")

(So far as the present Pharmacopœia and Formulary are concerned this question does not arise, as the Congress must be held to have had the existing editions in mind, and therefore to have adopted their standards as part of the law. The difficulty arises only as to future revisions.)

(Practically the same question would be raised if, by direction of the U. S. P. Board of Trustees, the Committee of Revision should revise some of the standards of the present Pharmacopœia, Would the new standard or the old be the law? If the decision in Ohio *v.* Emery be followed, then the old standard would prevail in all cases.)

(Again, the language of the statute requires the standard of strength, quality and purity to correspond to "the test laid down in the United States Pharmacopœia or National Formulary." But suppose that neither the Pharmacopœia nor the Formulary give a "test" for the strength, quality or purity of a substance, but merely a formula for its manufacture, or its definition by botanical or physical character? Shall we understand the word "test" in its ordinary significance, as the application of some physical agent or agency to the thing tested, or shall we understand it to refer to descriptions and definitions as well?)

(This question, to the layman, may seems to be inconsequential, but when we reflect that, by the general rule, the language of penal statutes must be construed strictly when against the accused, and liberally when in his favor, it will be seen that there are no such things as trifles in criminal law.)

The second division of this section provides that a drug shall be deemed to be adulterated:

"If its strength or purity fall below the professed standard or quality under which it is sold."

(Construed in connection with the preceding portion of this section, it would seem to follow that if a drug is not sold under or by a name recognized in the United States Pharmacopœia or National Formulary, and is not sold according to any professed standard or quality it shall not be deemed to be adulterated, no matter what its quality may be.)

(Here seems to be a loop-hole large enough to permit the passage not only of the traditional "coach and six," but of a whole procession of such vehicles, laden with spurious and adulterated drugs.)

The definitions of adulteration continue as follows:

In the case of *Confectionery:* "If it contains terra alba, barytes, talc, chrome yellow, or other mineral substance or poisonous color or flavor, or other ingredient deleterious or detrimental to health, or any vinous, malt or spirituous liquor or compound, or narcotic drug."

In the case of *Foods:* 1st. If mixed or packed with any substance which injuriously effects its quality or strength.

2d. If any substance has been substituted wholly or in part for the article.

3d. If any valuable constituent has been abstracted.

4th. If mixed, colored, powdered, coated or stained, so as to conceal damage or inferiority.

5th. If it contains any added poisonous or deleterious ingredient which may be injurious to health.

Provided, That there may be added to food products for shipment by external application, such preservatives as can be removed by mechanical treatment or by washing in water or otherwise, when accompanied by directions for the removal of such preservatives.

(This proviso, notwithstanding its indefiniteness, was doubtless intended to permit the superficial use of antiseptics, as boric acid, which may be removed before cooking, in articles of food not intended for immediate consumption.)

6th. If it contains any filthy, decomposed or putrid animal or vegetable substance, or any portion of an animal unfit for food, or is the product of a diseased animal, or of one that has died otherwise than by slaughter.

Section VIII declares the term *Misbranded* to apply to all drugs and articles of food, or articles which enter into the composition of food, if the package or label bears any statement, design or device which is false or misleading in any particular, or which is falsely branded as to the state, territory or country in which it is manufactured or produced.

(The language of this portion of Section VIII apparently forbids the preparation of package goods by the large manufacturer with the label of the retail dealer, unless both dealer and manufacturer are residents of the same state or territory. Whether this meaning of the law can be explained away or not, remains to be seen.)

Articles are also to be deemed misbranded. In the case of *Drugs:*

1st. If it be an imitation or offered for sale under the name of another article.

2d. If the original contents of a package have been wholly or partly removed and replaced by other contents, "or if the package fails to bear statement on the label of the quantity or proportion of any alcohol, morphin, opium, cocaine, heroin, alpha- or beta-eucaine, chloroform, cannabis indica, chloral hydrate, acetanilid, or any derivative or preparation of any such substances contained therein.

(The above requirement as to label, which on its face seems so innocent and free from guile, is probably destined to cause the drug trade a greater amount of trouble and annoyance than any other provision of the entire act, as will appear from the following considerations:

(By Section Six the definition of a drug is made so broad as to include almost every article in the drug store, even a large proportion of what are commonly known as druggists' sundries.)

(By Sections One and Two a druggist in a territory or the District of Columbia is liable to a fine of $500,00 to $1,000.00, and one year's imprisonment for selling or receiving from another state or territory with intent to sell, any article which is misbranded within the meaning of this act.)

(This renders criminally liable a druggist in the District of Columbia or a territory, who, after January, 1907, shall manufacture for sale, or sell any preparation, no matter what, or dispense any prescription, which is not labeled with a statement of the quantity or proportion of any of the above-named drugs, or who shall innocently receive from a manufacturer in another State, and offer to sell the same, a pound of fluidextract not correctly labeled as to its content of alcohol or of the other named drugs.)

(The same provisions apply to druggists in the States who shall receive any adulterated or misbranded articles from without the State, "and having so received, shall deliver in original unbroken packages, for pay or otherwise, or offer to deliver" the same to any other person.)

(Retail druggists seem to have gotten the impression that this labeling provision applies to proprietary preparations only, but it is not so stated in the act; and when courts are called upon to interpret a law, they must find the warrant for their interpretation in the language used, and not in newspaper comment, or in the arguments used before Congressional committees.)

(The only way that great hardship to the retail druggist can be avoided is that the authorities charged with the law's enforcement shall put a greatly strained interpretation upon its language, or else ignore its violation. If its literal enforcement is attempted, the comments which the druggists concerned will make will be so numerous and expressive that any comments by the writer hereof would be altogether superfluous.)

(As regards manufacturers and dealers located in the States, the labeling requirement attaches only when the goods are received from or shipped to some other State, or from or to a territory, foreign government, or the District of Columbia, and only while in "original unbroken packages.")

(This raises the question, What is an "original package?" This phrase has been the subject of numerous decisions both by State Supreme Courts and the Supreme Court of the United States, and as yet can scarcely be considered to be settled, since the decisions in the more important cases have generally been rendered by divided courts.)

(In the case of May & Co. *v.* New Orleans, 178 U. S., 496, the United States Supreme Court has decided that when an importer brings into a State packing cases, each of which contains a number of separate packages put up by a foreign manufacturer, which separate packages are to be delivered whole to different dealers, the "original package" is the outer packing case or covering in which the goods are shipped, and that when this case or covering is opened, the same ceases to be an original package. It is worthy of note, however, that Chief Justice Fuller, and Justices Shiras, Brewer and Peckham, all dissent from this view.)

(In the still more recent case of Austin *v.* Tennessee, 199 U. S., 343, the question arose as to whether packages of cigarettes, 3 inches by 1½ inches in size, each containing ten cigarettes and separately stamped, or the basket used by the express company in transporting them from one State to another, should be regarded as an original package. The decision was, that the separate packages of cigarettes were not original packages.)

(From this decision Chief Justice Fuller, and Justices Brewer, Shiras and Peckham again dissent, and the dissenting opinion, written by Justice Brewer, contains a strong and well-reasoned argument to the effect that the original package is the trade package put up by the manufacturer, and not the outer packing case in which it is delivered to the carrier for transportation.)

(The importance of a right understanding of the phrase "original unbroken package" is apparent when we remember that the shipper who consigns the goods for shipment, the carrier (in some cases) who transports, and the dealer in another State who receives them, are each liable to the penalties of the law if the goods are misbranded.)

(If the phrase be interpreted in accordance with the previously cited decisions in May & Co. *v.* New Orleans, and Austin *v.* Tennessee, then the labels as to the content of alcohol and other mentioned drugs must be pasted on the outer packing cases, since these are the "original packages," according to those decisions.)

(But if the intent of the label requirement is to notify the consumer of the nature of the medicine, this interpretation completely nullifies the effect of the law, at least in the States, since the opening of the outer packing destroys the original package, and the contents then merge with the property of the State and pass beyond Federal jurisdiction.)

(In view of the difficulty which thus arises, it seems probable that the Secretaries of Agriculture, the Treasury, and of Commerce and Labor, in order to save the intent of the law, will decide that the "original package" of the act shall be considered to be the usual trade package put up by the manufacturer, instead of the outer case or covering, leaving to the courts the labor of reconciling this conclusion with the doctrine of May *v.* New Orleans, and Austin *v.* Tennessee.)

(But if the officials named decide that the package referred to in Section Eight is the trade package put up by the manufacturer, and their decision is sustained by the courts, will this be the "original unbroken package" of Section Two and the "unbroken package" of Section Three? If so, then the act assumes a far wider sweep of jurisdiction than has hitherto been imagined by either its friends or its enemies. In that case druggists in the States, as well as those in the District of Columbia and Territories, would be liable under the law for the sale of an unopened package of a proprietary or other medicine which was not labeled in accordance with the requirements of Section Eight.)

The definitions of misbranding in the case of foods are as follows:

In the case of *Foods:* 1st. If it be an imitation of or offered for sale under the distinctive name of another article.

2d. If it be labeled or branded so as to deceive the purchaser, or purports to be a foreign product when it is not, or if the original contents of the container have been partly or wholly replaced by others, or if the label fails to bear a statement of the quantity or proportion of any morphine, opium, cocaine, heroin, alpha- or beta-eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilid, or any derivative or preparation of any of such substances contained therein.

(It will be noted that a food product need not have any statement of the alcoholic content, as is required in the case of drugs. Apparently, therefore, alcohol taken regularly in food is not as harmful as when taken occasionally in the form of medicine!)

(It is also worthy of note in this connection that although the manufacturer of a fluid-extract must label it with its alcoholic content before he can lawfully send it into another State, the dealer in alcoholic liquors for beverage purposes may ship or sell his goods anywhere without such statement.)

3d. If when the contents of a package are stated in terms of weight and measure they are not plainly and correctly stated on the outside of the package.

4th. If the package bear any statement, design or device which shall be false or misleading in any particular.

Provided, however, that if it does not contain any added poisonous or deleterious ingredients it shall not be deemed adulterated or misbranded:

1st. In the case of mixtures or compounds which are sold under their own distinctive names, and not as an imitation of or offered for sale under the distinctive name of another article, and also accompanied by a statement of the place where manufactured or produced.

2d. In the case of articles which are plainly labeled as "compounds," "imitations," or "blends." The term "blend," moreover, is defined as a "mixture of like substances," but not excluding harmless coloring or flavoring ingredients used for flavoring or coloring only.

There is also an additional proviso to the effect that the proprietors of proprietary foods shall not be required to disclose their trade formulas, in case such foods do not contain unwholesome added ingredients.

Section IX provides that no dealer shall be prosecuted under the act when he can establish a guaranty, signed by a party within the United States from whom he purchased the goods, to the effect that the same are not adulterated or misbranded within the meaning of the law. The guaranty to afford protection must contain the address of the guarantor. If adulterated or misbranded, the person giving the guaranty will, however, be liable to prosecution.

(In view of the uncertainty as to the meaning of the phrase, "original package," and of the labeling requirement, it would be wise for the retail dealers in the States who receive goods from outside of their own State, and for retail dealers in the Territories and District of Columbia, in all cases, to insist after the first day of January next, upon a written guaranty from the jobbers and manufacturers that goods purchased are not adulterated or misbranded within the meaning of the law.)

Section X provides that any adulterated or misbranded food, drug or liquor while being transported from one political division of the United States to another, or from or to an insular possession for sale, or having been so transported, remains unloaded, unsold, or in original unbroken packages, or if it be sold or offered for sale in the District of Columbia, Territories or insular possessions, or if it be imported from a foreign country for sale, or intended for export to a foreign country, may be libeled for confiscation in the U. S. District Court for the District in which the goods are found.

If the article is condemned as adulterated or misbranded, or of a poisonous or deleterious character, it shall be disposed of by destruction or sale, as the court may direct, and the proceeds, less the costs, paid into the U. S. Treasury. Such goods, however, cannot be sold contrary to the provisions of this law, or the laws of the jurisdiction in which they are located. Provided, however, that if the owner of said goods shall pay the costs in the case and execute a sufficient bond not to sell or dispose of such articles contrary to law, the court may order the same returned to him.

In all suits for confiscation, either party may demand a trial by jury of any issue of fact. All proceedings shall be at the suit of and in the name of the United States.

Section XI. The Secretary of the Treasury shall deliver to the Secretary of Agriculture, on request of the latter, samples of foods and drugs imported into the United States or offered for import thereinto. Notice of the fact shall be given to the owner or consignee who has the right to a hearing before the Secretary of Agriculture and to introduce testimony.

If it appears from the examination of the sample that the article is adulterated or misbranded, or is otherwise dangerous to health, or is under the ban of the law of the country in which it was made or from which it was exported, or is otherwise falsely labeled in any respect, it shall be refused entry into the United States or delivery to the consignee. If not exported from the United States within three months, the goods are to be destroyed, except that the Secretary of the Treasury may, pending examination and decision, deliver the goods to the consignee on execution of a bond for the full invoice value of the goods, and the duty thereon, and conditioned upon the return of said goods to the custody of the Secretary of the Treasury, if the decision be against their admission.

All charges for storage, cartage and labor on goods which are refused admission must be paid by the owner or consignee, and if not paid shall stand as a lien upon any future importation by such owner or consignee.

Section XII provides that the word "territory" shall include the insular possessions of the United' States; the word "person" shall import both singular and plural, and shall include corporations, companies, societies and associations, as the use may demand; and that the act of an agent or representative, within the scope of his employment, shall be deemed to be the act of the principal.

Section XIII. That the act shall be in force and effect from and after the first day of January, 1907.

(As regards retail druggists located in the States, the law will therefore not apply to goods in stock prior to the first day of January. In the case of jobbers it will not apply to goods in stock, unless subsequently shipped to another State. In the case of residents of the Territories and the District of Columbia, it will apply after January 1st to sales of goods now in stock, as well as to those of future purchases.)

THE LEGAL RECOGNITION OF THE U. S. PHARMACOPŒIA.

BY JOSEPH W. ENGLAND.

The U. S. Pharmacopœia occupies an anomalous position among the pharmacopœias of the world. It is not issued under governmental auspices, but is framed by a Committee of Revision and sold under the direction of a Board of Trustees, both of which committees are appointed by a National Convention. The convention is an incorporated body, which meets at the beginning of each decade, and is composed of delegates selected by the incorporated medical and pharmaceutical societies, the medical and pharmaceutical colleges of the United States, and the U. S. Army, Navy and Marine Hospital Service. At the last National Convention, which met in Washington, D. C., on May 7, 1900, sixty-two medical bodies and fifty-four pharmaceutical organizations were represented. The U. S. Army, Navy and Marine Hospital Service sent five delegates. From these representatives were chosen twenty-six members, consisting of twenty-one pharmacists, chemists and botanists (seven of whom held medical degrees), and five physicians to form the Committee of Revision, and also eight members, to form a Board of Trustees; the duties of the latter being to make contracts, attend to the finances, and place the book on sale.

As a historical fact, it is interesting to state that the first Pharmacopœia of the United States, a little 32-page book, was published in 1778, at Lititz, Lancaster Co., Pa., for the use of the "Military Hospital belonging to the Army of the United States of America," and "Adapted especially to our present state of need and poverty, which we owe to the ferocious cruelty of the enemy, and to a cruel war brought unexpectedly upon our fatherland. The Hospital of the U. S. Army was then located at Lititz in the building at present occupied by the Lititz Academy, formerly the Brothers' House. (American Journal of Pharmacy, 1884, 482.)

By Congressional action, the U. S. Pharmacopœia has been made a legal authority for the Department of Customs, for the U. S. Army, Navy and Marine Hospital Service, and for the District of Columbia and Territories under the control of the United States laws. By legislative action, it has been made a legal authority for certain States, and also, in the so-called Pure Food and Drug Law, or Act (Public Rec., 384), "for preventing the manufacture, sale or transportation of adulterated or misbranded or poisonous or deleterious foods, drugs, medicines and liquors, and for regulating traffic therein and for other purposes," recently enacted by Congress, to go into effect January 1, 1907.

It should be noted, however, that the new Pure Food and Drug Law applies only to products passing from one State to another, or under the the control of interstate commerce, though this covers a large proportion of the products made and sold. To cover state commerce, as well as interstate, it will be necessary for each and every State to pass legislation that shall conform to the national law.

The Pure Food and Drug Law recognizes as a "standard" for drugs the U. S. Pharmacopœia that is "official at the time of the investigation," providing in this way for the recognition, not only of the existing revision, but also of all future revisions. In this respect it differs markedly from the practice followed in certain state laws, which recognize either "the latest edition," or a specific revision, such as "the Seventh Decennial Revision," or "the Eighth Decennial Revision."

Serious objections have been made to the use of the expression, "the latest edition." Perhaps the most interesting case in point is that of an Ohio druggist charged with the sale of an article (cochineal) that did not comply with the requirements of the 1890 U. S. Pharmacopœia, but did comply with those of the issue that was in use when the law was enacted, which was that of 1880. A conviction was obtained. But the Supreme Court of Ohio set the verdict aside on the ground that the U. S. Pharmacopœia mentioned in the act was the one in effect at the time the act was passed, and not an issue not in existence at the time, and of the contents of which the legislative body could have no knowledge.

Under the caption of "Adulteration," item 6, Bates' complete Digest, vol. 3, 14, reports the following opinion of the Supreme Court of Ohio:

". . . Standard: The (Ohio)* Pure Drug Act of 1890 (871 v., 248), paragraph 3, refers to the edition of the U. S. Pharmacopœia then in use, viz., that of 1880, and a drug conforming to the standard described in that edition is legal. The revisers of that book cannot, by raising the standard, change the penal laws of the State; and it is in error to admit in evidence the later edition, without proof that its tests are the same as in the former edition" (affs. 3 N. P., 204). State *v.* Emery, 55 O. S., 364.

The full text of the Supreme Court decision above referred to appears in the Ohio State Reports, vol. 55 (January Term, 1896), 369 and 370, and is as follows:

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* Insertion by J. W. E.

"By The Court: The reference in the statute to the U. S. Pharmacopœia could be to no other than the edition of the book in use and recognized when the statute was enacted and went into effect, which was the edition known as that of 1880. It is not to be supposed that the legislature intended to adopt, by reference, as part of the penal laws of the State an edition of the book not then in existence, and of the contents of which the legislature could then have no knowledge. The drug, with the sale of which the accused was charged, was recognized in the edition of 1880, by the name under which it was sold, and a standard of strength, quality and purity therein laid down. It is not claimed that the drug sold was below the standard; and the sale could not be rendered unlawful because it is below a higher standard laid down in a subsequently revised edition of the book, though that edition was in use at the time of the sale. To hold that the sale would then be unlawful would be equivalent to holding that the revisers of the book could create and define the offense, a power which belongs to the legislative body and cannot be delegated. Exceptions overruled."

By an act of the General Assembly of Ohio, of March, 1904, the Seventh Decennial Revision (1890) was specifically made the official standard for drug products in Ohio. (Report of Ohio Dairy and Food Commissioner, 1905, 22); and through the courtesy of W. R. Ogier, Secretary of the Ohio State Board of Pharmacy (letter of July 25, 1906) the writer is advised that "the recent General Assembly amended the laws of the State making the Eighth Decennial Revision of the U. S. Pharmacopœia (1900) the legal standard of the State, and this revision will be the legal standard in Ohio until the legislature enacts a bill changing the standard, no matter how many revisions may take place in the meantime."

The experience of the State of Illinois is along similar lines, although no decision of a court has been made. The Attorney-General of Illinois has given an opinion (Druggist's Circular, November, 1905, 412) upon that section of the Illinois pharmacy law which reads: "The latest edition of the U. S. Pharmacopœia is hereby adopted as the standard in determining the recognized tests of identity and purity under this act." He decides, in effect, that as the law was passed in 1901, it cannot be construed to apply to the new edition of the Pharmacopœia, and that the Board of Pharmacy cannot prosecute under the latter for adulteration.

The law of Pennsylvania (Act No. 68, approved May 25, 1897), recognizes also, "the latest edition" of the Pharmacopœia, while the law of the State of New York (chapter 665, section 197) requires adherence to "the standard strength, purity and power established by the latest edition of the U. S. Pharmacopœia."

In this connection it is interesting to note that the United States Customs Regulations for 1849, and all subsequent ones, are based upon "An Act to prevent the importation of adulterated and spurious drugs and medicines, approved 26th June, 1848;" which act is published in full in the "Transactions of the American Medical Association" for 1848, 366.

Section 3 of this act provides that the drugs and medicines examined shall be regarded as adulterated or deteriorated if they are "inferior in strength and purity to the standard established by the United States, Edinburgh, London, French and German Pharmacopœias and Dispensatories, and thereby improper, unsafe or dangerous to be used for medicinal purposes." It should be noticed that the word "established" is used, and that this is not qualified by the further words: "or to be established."

"If the line of reasoning of the Supreme Court of Ohio in the Emery Case be followed by the Federal courts, the term "established standard" should be held to apply only to the standard in existence at the time of the passage of the act, and not to a standard to be established.

And yet the writer has received an opinion (letter of February 16, 1906), from the Assistant Secretary of the Treasury Department that "the United States Pharmacopœia of the Eighth Decennial Revision, official from September 1, 1905, is the standard edition for the use of appraising officers in connection with the examination of drugs," which decision is in violation of the enacting law of 1848.

In framing the new Pure Food and Drug Law, Congress, in deciding upon the drug-standards, has endeavored to steer between the Scylla of "the latest edition," and the Charybdis of "a specific issue" by recognizing the standards "official at the time of the investigation;" thus recognizing the present and all future issues of the U. S. Pharmacopœia.

The crux of the situation, with reference to the recognition of the U. S. Pharmacopœia in perpetuity, is, (1) that changes of identity, purity and strength of drugs are made every ten years; (2) that these changes, in effect, create and define criminal offenses, a right and power that belongs only to a legislative power, and cannot be legally delegated to an incorporation; and (3) that these changes are not made by Congress, and approved by Congress when made.

It may be that the present drug standards of the new Pure Food and Drug Law are legal, so far as they apply to the current issue, but if the Emery decision cited be accepted by the highest court as good law, they will become illegal for all future issues, unless each new issue is recognized by specific legislation.

WHAT ATTITUDE SHOULD THE DRUG TRADE ASSUME TOWARD PATENT MEDICINE LEGISLATION?

BY HARRY B. MASON.

Samuel Hopkins Adams, Editor Bok of the "Ladies' Home Journal," the Council on Pharmacy and Chemistry of the A. M. A., the physicians' organizations of the different States, and other individuals and associations have within the last year or two made a real issue of the patent medicine situation. It is up to stay. It will not down. The success of the narcotic labelling clause in the Congressional Pure Food and Drug Bill has given aid and comfort to the reformers, and organized attempts will be made next winter and succeeding winters to enact legislation in the different States and in the National Congress.

Since *some* kind of legislation is inevitably bound to result from all this agitation, is it not wise and right for the drug trade to meet the issue squarely, grant what the situation demands, and thus prevent the radical and extreme legislation which the reformers will get if not met half way? Is not this policy just as expedient and just as necessary with patent medicines as in legislation affecting the sale of narcotics and liquors by druggists?

Now what are the evils of the patent medicine industry? Generally speaking, they seem to me to be five in number:

1. However much some people may deplore it, and however greatly physicians in particular may regret it, it cannot be gainsaid that in ordinary ailments a large portion of the public will buy and use patent medicines. It follows therefore that there is a real need for this type of products, and I believe that on the whole it is successfully met by a class of preparations which for the most part are useful and efficacious. They should not be wiped out of existence—nor, indeed, could they be. That some measure of regulation over them as a class is desirable, however, cannot be denied. In one way and another the absolute freedom afforded patent-medicine makers has led to abuses and excesses which need correction in the interests of the public health. The unregulated condition of the industry may therefore be considered evil number one.

2. Many proprietary articles, while efficient in a limited sphere of application, are held out as cure-alls. Exaggerated and ridiculous claims are made for them, as when, for instance, a good cough remedy is heralded as a cure for consumption. Few proprietors are entirely free from this sin, and here may be found the source of much of the hostility aroused against the patent-medicine industry.

3. The catarrh cures and similar products which contain cocaine; the soothing syrups, cough remedies and other preparations which contain morphine and opium—these may be and often are exceedingly harmful, and to such medicines hundreds of drug habitues owe their unfortunate and pitiable condition.

4. A few patent medicines, containing a maximum of alcohol and a minimum of medication, are only less harmful than the narcotic-laden proprietaries. This evil, however, has been greatly exaggerated by the magazine writers. They have been entirely guided by the content of alcohol, regardless of the content of medicinal agents, and regardless, conse-

quently, of the dose of the product and of its virtual loss of alcoholic identity. It has followed that their comparisons of alcoholic strength between patent medicines on the one hand, and beers, wines and liquors on the other, have been wide of the mark.

5. Some danger doubtless lurks in the promiscuous manufacture and consumption of headache powders containing acetanilid. Much has been said of these products in the recent magazine attacks, but I believe the harm arising from their use has been overstated to the point of sensational exaggeration.

Now how can these five evils be remedied?

1. *The Necessity for a General Regulation of the Industry.* The reformers want all formulæ printed upon the label. I believe this is both unjust and unnecessary—unjust because it would compel the manufacturers to give away their trade secrets, and unnecessary because it would give the consumer, ignorant of drugs, no protection whatever. A fairer and also a more efficacious method would be to lodge all formulas in the hands of the State Board of Pharmacy or Health, or in the hands of the National Department of Health which it has been proposed to establish for some years, or in both. Then let these boards be given discriminating powers: let them issue licenses to worthy products, and deny them to unworthy products. This is the method that is being worked out in Canada, where the patent medicine situation has been acute for the past year. A National Department of Health is needed in the United States for many other things besides this; and in the creation of such a department, suitably provided with experts, and handling health matters of national scope in one place with uniformity and wisdom, largely lies the solution of an adequate and just regulation of the patent medicine industry.

2. *Exaggerated Claims.* This evil will prove difficult to remedy. More can be done by the development of public sentiment than by any other agency, and here, as I see it, is where the reformers have done the most good in their campaign of education. Legal regulation will be of questionable value, but it is possible that the Boards of Pharmacy or of Health, given power to grant or refuse licenses to patent-medicine makers, could gain some control of the situation by passing upon advertising literature as well as upon formulæ. Certainly they could determine the language of the label and the carton.

3. *Content of Narcotics.* The "Chicago Conference Bill," which is merely a modification of the Beal anti-narcotic law, and which was approved by the representatives of the P. A. of A., the N. W. D. A., the A. Ph. A. and the N. A. R. D., provides that no "patent" shall be sold at all which contains in each solid or fluid ounce more than ¼ grain of morphine, ⅛ grain of cocaine, ⅛ grain of alpha- or beta-eucaine, ¼ grain of heroin or 10 grains of chloral hydrate. This bill is all right so far as it

goes, but it does not go far enough. Products which contain only these maximum quantities or less, and which would therefore be legally salable, should state the content of narcotics on the label for the protection of innocent consumers, who might otherwise become unknowing victims of drug habits.

4. *Content of Alcohol.* Let this be indicated on the label if it exceeds 20 per cent. To handicap makers more than this would be unjust, because from 15 to 20 per cent. of alcohol is a necessity for solvent and preservative purposes in nearly all pharmaceutical products; particularly is it imperative as a preservative unless large quantities of syrup are employed. The patent medicine tipples have all contained much more than this amount of alcohol. It might be argued that a remedy containing 20 per cent. of alcohol, and innocent of any pronounced medicinal activity, would lend itself to abuse, but the power which it is proposed to lodge in the hands of the State Board would suffice to prevent this even if the revenue officials did not step in and exert their authority.

5. *Content of Acetanilid.* Prohibit any proprietary headache powder or tablet from containing more than three grains of acetanilid, and prescribe that the dose shall be stated not to exceed one at a time.

With changes obtained in these five particulars I believe the patent medicine industry would be shorn of its evils. I believe, too, that this scheme of correction would be accepted by legitimate manufacturers as entirely fair and rational; it ought certainly to be agreeable to them as the lesser of two evils, far more radical legislation being the unpleasant alternative.

The installation of officers was now announced as the final order of business, but as the Chairman and Secretary had been re-elected and were already at their post of duty, the Chair thought this ceremonial might well be dispensed with. Mr. Sayre wanted a speech from the Chairman, but Mr. Oldberg said there had been enough speech-making.

On motion of Mr. England, the Section then adjourned.

MINUTES

OF THE

SECTION ON COMMERCIAL INTERESTS.

First Session—Tuesday Evening, September 4, 1906.

The first session of the Section on Commercial Interests was called to order by Chairman Henry P. Hynson, of Baltimore, at 8 : 35 p. m.

The Chairman opened the session by telling a very pretty story of how he had come into possession of knowledge of the fact that a certain young man in New York State, away back in the forties, had discovered the spurious character of an article alleged to be calcium carbonate, which fact was communicated to the New York College of Pharmacy, leading to an investigation which proved the truth of the statement, this leading in turn to an investigation and examination of drugs generally, with the result that the American Pharmaceutical Association was organized. (Applause.) This young man had become the venerable Ewen McIntyre, of New York City, now present in the room, and the Chair was pleased to invite the gentleman, as a mark of honor and respect, to take a seat on the platform during the proceedings of this session.

The Chairman then went on to say that, following the illustrious precedent of that great Ex-Chairman of the Section on Education and Legislation, Mr. Harry B. Mason, who, a year or two ago, had so successfully outlined a course of work that he believed would continue for a long time to come, he had endeavored to map out a program for this Section. For one thing, he had tried to interest those engaged in other branches of pharmacy besides the retail branch—the manufacturer and the jobber—in the work of the Section, and with some degree of success. He referred to the valuable work done by the very efficient Secretary, Mr. H. D. Kniseley, in carrying out the directions of the by-laws—work, he said, which had been somewhat neglected in the past. Delegates from State Associations had been invited to come to this meeting and take active part in the proceedings of the Section, in order to bring out, at first hand, some idea of the work being done in their respective associations. He suggested that it would be a good plan to appoint or elect a committee of five on resolutions, to which might be referred all matters coming up for discussion, as well as papers to be presented, and which should also formulate resolutions directed by the Section, to come before the Section or before the general session. He invited a motion to that effect, as he believed it would facilitate matters greatly.

The General Secretary suggested that a similar motion had already been adopted in general session, creating such a committee on reference and resolutions, but the Chair thought it would be well, nevertheless, to have a committee of this Section to make recommendations to that committee.

Mr. L. A. Seltzer, of Detroit, so moved, and the motion was seconded by Mr. Flemer, of Washington, who suggested that the committee be appointed by the Chair. The Chair said he preferred the committee to be named by the Section, but Mr. S. A. D. Sheppard put the motion to the house that the Chair appoint this committee on resolutions, and the motion prevailed.

The Chair said he would appoint the committee in a few minutes, and called on the Secretary, Mr. H. D. Kniseley to read his report, which he did as follows:

Mr. Chairman and Fellow Pharmacists:

There is no trade, profession, or occupation that will engage our serious consideration unless we first carefully estimate the revenue that will be derived therefrom, neither will we consider a sale or exchange of our merchandise unless we see some profit to ourselves or our business resulting from this transaction, and in this age of commercial activity and close competition *Commercial Pharmacy* occupies a very prominent location upon the Pharmacist's Calendar; for this branch of the business has to do with the getting of money which is a necessary adjunct to any successful business; while a thorough knowlege of scientific and practical pharmacy is indispensable, yet this knowledge alone will not pay our bills at the end of the month nor provide our families with the necessaries of life. It takes cold cash to pay these bills and the commercial end is to devise ways and means whereby the cash may be forthcoming.

Some of the questions always agitating the minds of the Pharmacist are: Rents, Insurance, Clerk-Hire, Stock Keeping, Advertising, Rebates on Quantity purchases, Discount for cash, Freights, Containers, etc.

In the Indian Territory, or the eastern section of the new state of Oklahoma, which I represent, we have two serious obstacles: 1st, high freight, .75 to $1.35 per cwt., which in a majority of towns west of the Mississippi river runs as high as $1.90, and and from points in the far east as high as $2.65. In looking over a great many stocks of goods in the Indian Territory and some states adjoining; I find Syrups, Elixirs, Concentrated Solutions, Tinctures, etc., in heavy containers, five-pint bottles to five-gallon carboys, which could have been made in our own laboratories; thus requiring extra cost for containers, freight on menstrua (which are largely water) and medicated syrups which require freight on both sugar and water.

Instead of all this the pure assayed drug should be bought in such quantity as we will need in a reasonable length of time and sugar should be bought by the barrel; pure water can be furnished without freight attachment.

The writer found in a certain drug store a carboy of concentrated solution of sodium phosphate, the cost of which was acknowledged to be:

Carboy, 5 gal	$1.25	
Freight	1.35	
Con. Sol. Sod. Phos	12.00	Special price.
Total	$14.60	

Total for five gallons $14.60 or $2.92 per gallon. Any one of you present knows that this can be made in your own laboratory for considerably less than half this amount per gallon. This is only one example out of many where scientific and practical pharmacy directs the commercial side to the saving of many dollars each year to the pharmacist.

The second point I desire to call your attention to is high insurance rates and to the extent as to discriminate against the druggist. Drug stocks in the Indian Territory run minimum $2.90, maximum $11.50; example of each in my home town. I am glad to report that during the last twelve months we have had a reduction of .25 per cent. in drug-store insurance in the Indian Territory. And I believe before another year passes we will see still further reductions the result of our Association work along the line of insurance rates.

In the report of Committee on Trade Interests, the Tennessee Pharmaceutical Association point directly to market prices noting increases of prices, camphor, turpentine, linseed oil, white lead, glass, chalk crayons, and other items; noting a condition of prosperity and increased volumes of business generally.

The open market affords a great opportunity for study of supply and demand, the causes for fluctuations, and if carefully studied offers us advantages over our competitors who pay less attention to the market.

Price-cutting and dispensing physicians bother the registered phamacists very little in Indian Territory. In fact there is so little that we hear no reports worth mentioning.

In answer to a circular letter sent out from my office, the committee appointed by the Texas State Association to report on Commercial Interests reported as follows: We have carefully digested the matter on this subject submitted to us by the Secretary of the Section on Commercial Interests, and as this subject covers all branches of the drug business, time will not permit us to render a lengthy report covering all on this subject. But we would kindly suggest that the matter be fully discussed by all members present, and all such as is deemed to bear on points most vitally concerning us to be submitted to the Secretary of the American Pharmaceutical Association. Signed by Committee.

I find no discussion upon the subject further than is usual in the way of papers on subjects of "Advertising that pays," "How to run a Drug Store succcessfully," "The Physician and the Pharmacist," "The proper use of show windows," etc.

Page 90, Proceedings of Missouri Pharmaceutical Association, 1906, will be found fourteen points of valuable information for retail pharmacists, and I desire to emphasize Number 7, keeping close tab on charge accounts. Also keep an accurate set of books just the same as all successful merchants do, paying bills promptly, taking advantage of all discounts offered upon each purchase of goods.

The report of committee on trade interests of the same association calls up the following subjects:

1st. The Tax-free Denaturized Alcohol Bill.

2d. The Mann Bill.

3d. The General Price Conditions on Patents and Proprietaries during the past year.

4th. The National Association of Retail Druggists.

5th. The So-called Drug Trust.

6th. General Trade Conditions.

These subjects are discussed and very well digested by the different drug journals of the United States, and in papers read before the State Associations. The August number of the "Apothecary" contains the report of the Pennsylvania State Pharmaceutical Association upon Commercial Pharmacy, making lengthy reports upon "The Crusade Against Patents," and the Nostrum Crusade.

I notice many discussions upon the subject of side lines for the drug store. Circumstances, general surroundings, locations, etc., seem to say that no general rule can be established excepting one, and that is the "Liquor (Spiritus frumenti) side line." The consensus of opinion is that this line should not be handled in the drug store.

In conclusion, I desire to express my sincere appreciation for the honors conferred upon me by the American Pharmaceutical Association, and regret that I have not been able to do more for the interest of the Section on Commercial Pharmacy. I truly hope my successor in office will have an able chairman, such as I have had, and that he may be able to get in close touch with all the State Associations, and bring you a much better report.

On motion of Mr. Mayo, the report was ordered received, to take the usual course.

The Chair now called on the representatives of the various State Associations to talk on trade matters, and indicated Mr. D. F. Jones, of South Dakota, as the first speaker.

Mr. Jones stated that while he was a member of the delegation, Mr. I. A. Keith was the member especially posted on commercial matters in his State, and he would leave him to speak for the delegation.

Mr. Keith said he was not as well posted on trade conditions as he should like to be, but stated that the matter of trade interest in his State in which they felt especial pride was that of mutual fire insurance. The druggists of the State had organized such a company eleven years ago, and it had been a great success. The company was really an agency of the State Association. He said they were in hearty accord with the American Pharmaceutical Association in its efforts to advance the commercial interests of the country.

Mr. F. J. Wulling, as the representative of the Minnesota State Association, said that while he was not personally closely allied to trade matters, he could say that the pharmacists of his State were well organized, and that through the help of the N. A. R. D. they had been enabled to stop price-cutting and to put prices upon a fair basis. In the Twin Cities an agreement existed between the retail pharmacists and the department stores by which the latter were allowed to sell medicines for from three to five cents less than the former on dollar articles, and the plan had worked very satisfactorily. In many of the smaller towns there is an agreement between the pharmacists as to a price schedule, and they stick to it. Persons having the habit of going from one drug store to another, claiming they can get an article cheaper elsewhere, invariably fail to get a reduction. So well organized are they in some of the smaller towns that they are accused of being a trust.

The Chair said he had been requested to call on Mr. C. E. Ward, of Colorado, to speak on the subject of mail-order houses, and Mr. Ward began by saying he was glad to report that Colorado had no mail-order house—"that great octopus that confronts the retailers of America to-day." However, there was a vast territory tributary to Denver cursed with the circular price-lists of Montgomery, Ward & Co., Sears, Roebuck & Co., and others. He thought it was high time for the Commercial Section of the American Pharmaceutical Association to take some action to have a committee or delegation appear before the coming Congress to oppose the Parcels Post Bill, which would benefit and extend greatly the mail-order houses of the country. Self-preservation is what the pharmacist must seek. He thought the A. Ph. A. could work in connection with the N. A. R. D., which had done so much for the retail business of the country. He spoke of the pronounced evil in the West of jobbing-houses selling at wholesale prices articles really ordered in retail quantity, and gave some illustrations. On the other hand, he did not think the retailer always acted fairly by the jobber. He thought the question of a definition of the limitations of each would be a subject worthy the attention of this Association. As Secretary of the Colorado State Association he could say, that the suggestions made by this Association, and especially by this Section, were read before the State Association, and all these recommendations approved—except that of the Chairman of this Section in regard to the conferring of the degree of Doctor of Pharmacy.

The Chairman made the point that this was matter for the Section on Education, but the speaker said he "wanted to give the devil his due." (Laughter.) He congratulated the Section upon its growth since the Kansas City meeting, and upon the interest being manifested in it.

The Chair here named the Committee on Resolutions provided for as follows: L. A. Seltzer, of Detroit; Lewis Flemer, of Washington City; John G. Godding, of Boston; C. H. Avery, of Chicago, and C. W. Benfield, of Cleveland.

Mr. Hallberg suggested that this committee take into consideration the matter of drawing up a resolution memorializing the National Congress as to the importance of not giving the "octopus" any further special privileges beyond those now enjoyed, by the passage of the Parcels Post bill that has been before Congress in some form during the last few years. He said he scarcely believed the gentlemen present from the eastern cities, and also from the large cities of the west, knew the meaning of this "gigantic, hydra-headed monster," that had been referred to by the gentleman from Colorado. It is the greatest menace that has threatened the prosperity of the retail druggists west of the Mississippi. These monster mail-order houses are building mammoth establishments, and will surely encroach upon the business of the retail druggist. This, he said, was a question that should be given the greatest possible attention by this Section. Congress must not be allowed to pass any parcels post bill, because "these fellows will be sending automobiles through the mails at the rate of a cent a pound." (Laughter.) The regulations for the enforcement of the Pure Food and Drug Law should be so framed as to hamper these houses as much as possible in sending their stuff through the mails. Some people, he said, thought it would be impossible to stop the development of these houses, holding that they are one of the consequencies of our centralization tendencies, destined to result in the survival of the fittest, which may be true enough; but the pharmacist must look out for himself and do all he can to protect his own interests. He considered this one of the burning questions of the hour, which should be carefully studied and considered. (Applause.)

The Chair asked if there was a second to the resolution, that the Committee on Resolutions memorialize Congress.

Mr. Wooten said he was sure both Mr. Hallberg and the committee wanted to do that which would accomplish results, and he thought the committee should be instructed to use the *proper means* for accomplishing the end desired, leaving something to the judgment of the committee. There are ways and ways of stopping legislation, and it is not always best to directly oppose a measure. Mr. Hallberg himself had suggested perhaps the best possible means for defeating the Parcels Post Bill, and that was, to work strenuously for one-cent letter postage. It would be very doubtful if Congress would seriously consider a memorial from a lot of tradesmen scattered throughout the country asking that their business be not interfered with by giving an opportunity to some other business man to compete with him. The majority of the members of Congress represent the rural districts—the agricultural communities—and these men are not going to kill their chances for re-election by voting against that which many of their constituents think is a good thing. The voters are not likely to forgive a Congressman who stands by and votes against what they consider their best interests.

Mr. Hallberg still believed it would be the wiser policy to go at it boldly, and call the attention of the public to the threatened danger, and in that way educate public sentiment, thus reaching the members of Congress. "Subteranean methods of legislation" might be successful in some instances, but he did not think that the best plan to pursue here.

The Chair gave it as his understanding that all the Section could do in the matter would be to prepare the resolution in question and submit it to the general session, and Mr. Hallberg agreed in this view.

Thereupon, a vote was put on the motion, and it carried.

Mr. Lyman F. Kebler, of the Drug Laboratory at Washington, said he was very much interested in what had been told here, for he had been watching trade conditions. He assured the members that the Department of Agriculture, through his Bureau, had considered all the points made as to the Pure Food and Drug Law. The mail-order houses had been thoroughly discussed and that question fully kept in view, and all the methods used by these houses well considered. He thought the question would be met, probably, by the regulations put in effect. He thought the Drug Law was destined to be one of the greatest advantage to American pharmacists, in that it would not permit a man with an inferior article to put it on the market in competition with a better one—a good one. He will be compelled, if he has an inferior product, to say so on the package. Referring to Mr. Hallberg's criticism of that portion of the Pure Food and Drug Law he believed he could say, that while that clause might be abused, he considered it nevertheless a wise provision, in that it will permit trade to go on, whereas if the law were too rigid it would demoralize trade in some respects. For instance, asafetida as now brought into this country is largely adulterated, and very few pounds would be brought into the United States and enter the channels of commerce if the law were too strictly enforced, or made too rigid. However, the final result under the new law will be, that the inferior drugs will gradually drop out, because pharmacists will not put up with them. For his department, he bespoke the assistance and co-operation of those actually engaged in the retail business, and said if they would call the attention of the department to these matters they would receive the utmost and most careful attention. (Applause.)

Mr. C. H. Avery, of Chicago, said his local branch had brought into the membership of the Association 104 accessions since the 1st of January, and he attributed that fact largely to the interest the American Pharmaceutical Association was taking in commercial matters. He thought it a good thing that more attention was being given to the vital matters affecting the retail druggist.

The Chair stated that a few days ago he had had the honor of a request from one of the pharmaceutical journals for a copy of his address. He answered that he had prepared no formal address but would make it suit the occasion, and he believed now it had been a wise thing not to have one, in view of the range and character of the discussion. He invited yet others to speak, and said he wanted these practical matters discussed by men present who were fully able to discuss them—much more ably than the Chairman could have done in an address.

Mr. Leo Eliel said he had not intended to speak, but he was impressed with a visit he had made that morning to the State Laboratory, which was largely engaged at present in an examination of drugs obtained by inspectors of the State Board of Health from all parts of the State. He was informed there, he said, that out of a bunch of thirty samples of black antimony, obtained in a certain large city in the State (not Indianapolis), only one absolutely came up to standard. Other samples contained traces of antimony up to fifty per cent., and the rest were absolutely devoid of antimony. They had doubtless all been purchased in good faith from some jobber. In such cases, however, the pharmacist has to suffer the consequences of the jobber's ignorance. He gave one or two other instances of this sort, and held that something should be done to protect the pharmacist from this evil.

The Chair remarked that he thought this discussion was one more properly for the Educational Section, but would say that he did not believe, personally, that in this day and generation the pharmacist could throw the responsibility for selling impure drugs, in an action for damages, on the jobber. He would entertain a motion, however, to refer to the Committee on Resolutions.

Mr. Hallberg did not agree with the Chairman; he thought the Section on Commercial Interests was the proper place for this subject to be brought up and discussed, and called on Mr. Joseph Weinstein, of New York, for a statement as to the situation in his State, with which he was probably familiar.

Mr. Weinstein said the Board of Health had supervision of the matter of adulterations in New York, but they would never dream of fining the druggist for selling adulterated antimony where he had bought the article in good faith from the jobber. In that case the jobber would be prosecuted like anybody else.

Mr. Hallberg then moved that the Committee on Resolutions of this Section carefully consider the work of the Association's Committee on Drug Adulteration, and then present to the Committee on Reference and Resolutions, to bring before the Association in general session, a resolution covering this particular question, as to how far these State Boards should penalize pharmacists for selling preparations or articles not up to standard. He thought some distinction should be made as to the responsibility of the pharmacist where preparations were adulterated to the extent claimed —and even where preparations were liable to deteriorate, like sweet spirit of niter—without fault on the part of the pharmacist.

Mr. Eliel seconded this motion.

Mr. Flemer raised the point that this subject was entirely foreign to the jurisdiction of this Section, and belonged in the Legislative Section.

Mr. Alpers, of New York, thought it was "commercial at one end and legislative at the other," and that this Section might just as well express itself on the subject. In his opinion, the responsibility for selling adulterated or sophisticated or inferior drugs will always rest—and naturally should—in law, with the man who sells them; the man who sells cannot shift the responsibility to another by claiming that he bought in good faith.

The question at issue, however, is not a question for the General Government, but one for each State to decide; therefore, it is a question to bring before the State Associations. The retail pharmacist should demand from his jobber that he take all the risk for the goods he sells, and guarantee them to be up to standard.

Mr. Wulling, of Minneapolis, corroborated the correctness of the position taken by Mr. Alpers. The matter had been discussed in Minnesota, the idea prevailing there being that the pharmacist should be held responsible only for the purity and strength and identity of the preparations that he makes himself, and exempt from responsibility for his purchases. That question was submitted for some legal opinion, and the report brought back was that the pharmacist was responsible for the drugs he dispensed, and the suggestion was made that the retail pharmacist hold his jobber responsible for any loss or damage resulting from the use of his goods.

Mr. D. F. Jones gave it as his opinion that the consideration of this subject here would help the retailer in no practical way, nor could the State association help him. It was a matter, he said, that the individual must work out for himself. His instructions to his jobber were, to send him only the best goods, and he has a habit of occasionally examining them for purity and quality, and when he finds them at fault he returns them to the jobber in the most expensive way possible—generally by express. This lesson he takes to heart—one of his jobbers, particularly—for about a year, and then he forgets it, and the lesson has to be taught him again. If it is understood that the jobber shall furnish only the best he will do it, because he wants the trade.

Mr. Caswell A. Mayo agreed with the speakers who held that the jobber must be held responsible to the retailer, and suggested that the Committee on Resolutions submit a form of agreement for securing to the retailer this protection. He said it would be a valuable thing to lay before the retail trade of the country.

Mr. Hallberg's motion was then put to a vote and carried.

Mr. Avery, of Chicago, stated that in the arrangement of topics for the evening there were some features of special importance, and suggested that Mr. Anderson, of Brooklyn, be called on to read a paper he had prepared on the subject of co-operative buying. The Chair said he was just about to call up this subject, and he hoped the members would express their views fully upon it—being careful, however, not to go over the same ground covered by others, so as not to consume unnecessary time.

Mr. Anderson then read his paper as follows:

ADVANTAGES OF CO-OPERATIVE BUYING.

BY WILLIAM C. ANDERSON.

The advantages of co-operative buying can best be estimated by considering the weakness of the individual with the strength of numbers and the value of capital in purchasing the numerous goods that make up the stock of a retail drug store.

It would be inconsiderate for me to take much of your time in discussing the general subject of co-operation, for everyone who is a member of one or more organizations demonstrates by such membership his recognition of, and belief in, the value of co-operation. To you then as members of the American Pharmaceutical Association it is only necessary to state that co-operative buying brings to those interested that which is generally sought by co-operation, namely, the ability to meet the advantages and power of the mighty by the combined efforts of the weak, and enables the small dealer of moderate means, who, owing to conditions which prevail in the marketing of goods, is placed at a disadvantage when acting alone, to meet trade conditions that are regulated by his large and wealthy competitor. Year after year we note the increase in large dealers and large establishments, and decrease in small ones in nearly every line of trade; old familiar spots where a successful business was once conducted have faded away or are struggling through a miserable existence, while the large establishment in the same line becomes more important and extensive. Some claim this condition is due to the tendency of the times and increased desire for show and splendor, and while these no doubt have had some effect, the chief causes have been the advantages which capital has in purchasing goods and the failure on the part of small dealers to recognize the value of co-operative buying.

Profiting by the mistakes of others, many retail druggists have maintained a paying business by joining with their fellow-druggists in a co-operative buying organization.

These organizations came into existence through the activity of far-sighted druggists, who had observed the cute move of the large dealers in taking advantage of their buying power to strengthen their position and increase their trade at the expense of the smaller dealers. The primary cause for their establishment may be charged to price demoralization, for as long as fair retail prices prevailed most retailers were content to purchase at the long wholesale price, but when aggressive cutting made it impossible for them to meet the prices of their large competitors and still make a profit by the old system of buying, the purchasing side of their business was given more consideration, and they soon found that they could save much by purchasing in quantities direct from the manufacturer, the larger the quantity the greater the saving; and this fact opened their eyes to the system employed by their large competitors, for they noted that while his cutting was most aggressive, it seldom fell below the long wholesale price; for instance, an $8.00 a dozen article was seldom cut below 67 cents, a $4.00 article below 34 cents, and others in proportion; thus the small dealer in meeting the cutter's price and purchasing in small quantities through the wholesale trade was handling such goods without profit, in fact at an actual loss, while his large competitor by taking advantage of his purchasing power was making from 10 to 25 per cent. on every sale, according to the goods sold and quantity purchased. The length of time a small retailer can exist under such circumstances depends upon how much comfort he can forego and how much vitality he can sacrifice in curtailing expenses in order to meet the emergency caused by unequal conditions. Believing that a healthy business required meeting a competitor in the purchasing as well in the selling price, some retailers who were fortunate enough to have a few extra dollars met the emergency by buying in quantities sufficient to obtain the advantage of discounts, and being unable to handle the full amount of goods alone, divided them with some of their fellow druggists; others of more limited means joined with a few others in similar circumstances, and their combined capital was used to the best advantage. The advantage gained and relief afforded with the limited number of goods that could be handled in such a way so impressed those interested, as well as many observers who had not taken an active part in the transactions, with the great possibilities, that co-operative buying organizations, with membership ranging from ten to three hundred, were established, and proceeded to extend the work and benefits of the smaller unorganized bodies.

In some instances the membership has become so large, the goods handled so numerous and the business done so extensive, that a distributing depot under the supervision of a manager had to be established, the additional expense, which is usually about three per cent., being more than overcome by the increase in the variety of goods handled. Co-operative buying and co-operative buying organizations were born of necessity rather than choice, for no man or body of men desires to increase their labors, and such organizations cannot be conducted without sacrifices on the part of some. Their existence is an honorable one, their transactions just and lawful, their objects most worthy, and their benefits distributed among those who need them most, and who without such organizations could not obtain them. They extend to the smallest dealer the advantages of the buying power of thousands of dollars upon an investment of a small sum. They give larger sums than any other form of investment. They enable a retail dealer to meet competition and still make a profit, or if rigid competition occasions a loss, to lose as little as his competitor does.

They avoid the necessity of carrying a large stock of any one article, as the same proportion of advantage is secured in the purchase of one-twelfth dozen as in the purchase of five or ten gross of an article; this not only gives the free use of money that otherwise would be tied up in stock, but prevents shopworn goods, which every retailer knows are a detriment to trade.

They carry out the true principles of "live and let live" and "equal opportunities to all;" for every member while making a better living through the operations of the organization is not only extending to his fellows the privilege of living, but is assisting them to live, without taking from anyone privileges to which they have been accustomed. While it has been claimed by interested parties that co-operative buying injures the business of the "recognized jobbers" self-preservation is the first law of nature and there is no justice in the claim that in order to be true to the principles of "live and let live" the retail druggist must sacrifice privileges in buying that he has always enjoyed and thereby injure his business or deplete his profits in order that the wholesale druggist may gain privileges that he has never enjoyed.

Those engaged in co-operative buying ask only for "equal opportunities" and while interested in such ideals as one price to all, and a condition where the purchaser in one, five or ten gross lots shall have no advantages over the one whose business only necessitates and financial condition only permits the purchase of one quarter or even one-twelfth dozen of the same article, believe that the safe and sane way of attaining high ideals, particularly those that make direct changes in old established ways of doing business is to avoid dangerous sacrifices and maintain sufficient life to fight for the ideal, by meeting existing conditions. Giving discounts for purchases in quantities has been for years and is still a system employed by the manufacturers of about all the goods handled in the retail drug trade; in fact by manufacturers in nearly if not every line of goods, even in our retail drug trade the system of giving advantages in prices to large purchasers is carried out; in fact this system has become so universal and its necessity and value so firmly fixed in the minds of many that it is quite probable that you and I will have finished our work in the interest of pharmacy before rochelle salt that costs the one who purchases a pound forty-eight cents, can be bought by another customer in one ounce quantities at three cents, twelve pills be compounded at the same price per pill that we would compound one hundred for; one-twelfth dozen patent medicine purchased at the same ratio as five gross and the true principle of equal opportunities to all in the purchase and sale of goods becomes an established fact, and as long as a manufacturer shall continue to give discounts for quantity purchases to an aggressive cutter, dry-goods firm, broker, large retail dealer, their agents or representatives, he has no just right to withhold the same conditions of sale from a number of smaller retailers whose only chance of meeting trade conditions is through co-operation, for law and justice demand that all other conditions being equal, any sum of money accumulated through the efforts of a number of small dealers shall have the same purchasing power as the same sum from an individual firm or corporation.

I believe I am most consistent in making these claims of equal opportunities for co operative buyers, for they ask of some only what they extend to all, the field of co-operative buying being open to every retail druggist and any one with a small or large amount of money at his disposal can usually find a number in a like position who will gladly join forces for the advantage of all. The only one who cannot take advantage of co-operative buying is the unfortunate whose financial condition makes it necessary for him to use all his income for current expenses; this, however, is no fault of co-operative buying nor does it lessen its value, for while one so situated cannot take advantage of the opportunity to better his condition, the fact that co-operative buying exists does not make his condition worse but stands as a valuable opportunity whenever fortune favors him and he is able to take advantage of it. The prices he is compelled to meet are set by the aggressive cutter and not by the co-operative buyer, who, by his connection, shows his good understanding of the value of discounts and whose object is to turn as much of them as possible into profits. Again, co-operative buying upholds the principle of "equal opportunities" in a most practical way by its system of distributing goods, for no matter how much capital one may invest or how many goods he may use, he has no advantage in price over the small investor and small user.

The spirit of organization, which means so much for the retail drug trade, is developed in a most practical and substantial way by co-operative buying. Men who have been deaf to the call of other forms of organization, and others who, though once active, have lost faith, become enthused with the possibilities within the reach of the retail drug trade when they realize the prompt and positive benefits derived from this form of organization. It is only natural for one who invests his money or spends his time for certain objects to look for results; consequently, the stability and power of any organization depends more upon what it can give its members than what it may promise them; the ability to give actual value in dollars and cents appealing most strongly to the average man.

Co-operative buying leaves no room for doubt as to the positive value of organized efforts, for its greatest benefits are distributed in the form of hard cash.

The actual earnings through co-operative buying depend upon the amount of money available for buying purposes, and the quantity and class of goods that are bought, some goods allowing a saving of but eight per cent. when bought in quantities that can be handled by the average co-operative organization, while others allow a saving of one hundred per cent. or more; but it is safe to estimate that the smallest co-operative organization will earn its members at least ten per cent. on their purchases.

What this means to the average retail druggist can be appreciated when we consider that one who does a small business and purchases but $1,000 worth of goods a year makes a net earning of $100, and larger buyers in proportion. I do not maintain that co-operative buying is the ideal in pharmacy, but must contend that until the American Pharmaceutical Association assisted by State and Local Associations of retail druggists can raise pharmacy to a position where professional ability will have more power than shrewd commercial tactics in maintaining a successful business career, or the marketing of goods on a direct contract and serial numbering plan will maintain a living retail profit, the best means of meeting conditions within the trade and maintaining energy and life within the ranks of the small retail dealer will be through co-operative buying.

The Chair suggested that there were several papers on the same subject, and said that, with the permission of the Section, he would call on Mr. England, of Philadelphia, to read a paper by Mr. Kline, of that city, on the results of co-operative buying. Mr. England presented the paper, as follows:

CO-OPERATIVE BUYING.

BY MAHLON N. KLINE.

I do not desire to discuss the "injustice and inequality" of co-operative buying by retail druggists. My opinion is that it is unprofitable and impracticable rather than inequitable.

What argument can be advanced against club buying by retail druggists? A few years ago, when writing in opposition to club buying, I based my argument chiefly upon its "injustice" because of the understanding, implied and expressed, existing between the three branches of the trade, manufacturers, wholesalers and retailers, since the formation of the National Association of Retailers. The N. A. R. D. came into existence because of the belief that as manufacturers of proprietary articles had protected wholesalers under contract arrangements, this protection should be extended to the final distributor. The wholesalers, individually and collectively, supported this plan because they felt that their own interests would be best served by doing so. Retailers based their arguments in favor of protection upon promise of co-operation with manufacturers to protect them against substitution, and with jobbers against the growing menace of club buying of largest quantities at lowest prices.

Seven or eight years' experience has proven that neither of those promises has been fully kept. No need in this paper to go into details. Every one at all conversant with the trend of the drug business in later years admits this to be true.

No sooner were local associations of retail druggists formed as branches of the N. A. R. D. than the temptation to do more than meet and attempt to agree upon selling prices presented itself. The most eloquent defenders of co-operation with manufacturers and wholesale dealers on the floor at the N. A. R. D. conventions were usually found to be the leaders of buying clubs in their local communities. This reached its fullest development or expression in the action recently taken by the C. R. D. A. when a committee was appointed to carefully consider and report upon the following questions, viz.:

"1. Would the co-operative manufacturing and selling of proprietary preparations which are to be advertised to the public yield sufficient profit to justify our engaging therein, and is such a scheme feasible?

"2. What would be the result and what would the committee's recommendation be if the articles so manufactured and sold were those advertised to the medical profession?

"3. Would the co-operative buying and selling to the drug trade of drugs, medicines and drug sundries, such goods as are handled usually in drug stores, yield a satisfactory profit, and is this enterprise one in which it is advisable for the Association to embark?"

My answers to these questions will doubtless differ from those which will be given by the committee, but they will be my argument at this time against co-operation, or club manufacturing or selling.

Let me say that a sentimental feeling for manufacturers and wholesalers will figure but little in the solution of the problem. It is a business question. The future of buying-clubs depends not so much upon any consideration for promises made for retail druggists by the officers or leaders of the N. A. R. D., as upon the answer to the question *whether they can be made to pay*. If this is in the affirmative, all plans hitherto suggested, and to some extent maintained, under which each branch is to co-operate with the other two, will be speedily swept out of existence.

Already the organ of the N. A. R. D. "Notes," wavers in its adherence to a single remedial plan, the direct-contract plan, and voices the feelings of thousands of retailers in the inquiry whether, after all, the development of organization does not lie in the direction of perfecting a plan under which the individual members are to be benefited in a saving in the buying of articles they handle, rather than in adding to their selling prices. The former looks so temptingly easy, and the latter has proven so difficult.

Why not turn the machinery of the N. A. R. D. into a mammoth manufacturing and jobbing concern, as is suggested in a recent copy of Notes?

My answer to questions 1 and 3 propounded by the C. R. D. A. is, *No*, for the following reasons:

Manufacturing proprietary articles and establishing a more or less permanent sale for them is not to be lightly undertaken in these days of expensive advertising and doubtful financial results. More wrecks are strewing the path of the past history of proprietary manufacturing than most men realize, and the few fortunes made have so dazzled the vision of those suggesting such a plan as to entirely blind them to the vast number of lamentable failures. And when successful, the reason is largely to be ascribed to the business sagacity of the manufacturer, a talent which is the exception and not the rule in the business world.

It would be interesting to ascertain exactly what percentage of the capital invested in proprietary medicines during the last twenty-five years has disappeared never to return. I venture to say that not fifty per cent. has been saved, and counting the total investment of all, not three per cent. has been earned on this total investment. And if this is true when the business has been managed by the men who invested *their own money*, how much greater would be the loss if it would be managed by some one who had little but his own salaried position at stake. The prospect of success is to my mind so hopeless as to be hardly deserving of serious treatment here.

As to No. 3.

This is already answered in part by noting the history of buying-clubs, though none have been in existence long enough to give us a reliable basis upon which to figure. The managers have, for the most part, practically contributed their time and talents, or at least obtained very meagre compensation. Dealers have sent cash with orders, sent their own messengers or teams for delivery, and were content to get in this way a very small proportion of their daily wants. Investments have not even then been unusually profitable, the stockholders receiving their principal reward in the satisfaction derived from being members of a wholesale buying-club. The shrewder ones have usually found it more profitable to invest any spare capital in stock of regularly organized wholesale drug companies, where such stock could be purchased.

Statistics carefully collected by investigators have shown that the gross profits of wholesale drug houses, equipped with ample capital, large and complete stocks, and manned by managers of more than average business ability, having their own money invested, have not exceeded 12½ per cent., and after deducting expenses and interest on capital, a net profit is left which rarely exceeds two and one-half per cent., and more often less than one and one-half per cent. on the investment. Again I ask, how can a buying-club, managed by a man who is usually a man of mediocre business experience and talent (otherwise he would not be willing to serve in such a capacity) conducting a business in which other people's money, and little or none of his own, is at stake, show much saving upon the average druggist's purchases?

I had our books gone over recently and find that 755 orders from city customers during three days, just as they came in, averaged only $7.03 each, while during the same period the country orders averaged $34.91. I believe this represents fairly the business of every other house doing a large jobbing business. Of course this does not include the heavier or package business, but only the jobbing department.

Who wants to undertake to handle these small orders, covering thousands of articles which must be promptly executed, and delivered, free of boxing and cartage, to the depots, or, if city orders, to the remotest sections of the city, upon a smaller margin than twelve and one-half per cent. per gross profit?

I have said nothing about the equipment, now rendered more necessary than ever before, owing to Pure Food and other laws, of a thoroughly equipped analytical department, so that every article susceptible of adulteration can be examined before passing it on to the regular druggist, who now expects to get his goods under a guarantee; but this is another important factor in arriving at an answer to question No. 3.

I feel satisfied that the correctness of my answers to questions 1 and 3 of the C. R. D. A. will be proved by experience. If not accepted by the committee of the C. R. D. A., or others considering these questions, they will find that the facts and figures herein given are stubborn things and capital will be slow in coming forward to combat them.

At any rate, I submit them as my contribution to this discussion, in the hope that they may be of interest and perhaps give pause to undertakings which would be calculated to break down all artificial barriers of protection against the cutting evil.

Mr. J. W. T. Knox, Associate on the Committee, was called to the chair while Mr. Hynson presented a paper by Mr. Mittelbach, of Missouri, on the objections to co-operative buying.

CO-OPERATIVE BUYING.

BY WM. MITTELBACH.

Co-operative buying may have some immediate advantages; but the disadvantages are so much greater, and the conditions following so contrary to natural laws, that the buying-clubs soon disintegrate, or become a jobbing firm. The formation of buying-clubs is unnatural, because it has a tendency to eliminate a healthy, keen competition—the very life of trade, and retard the development of individuality, that has been so strongly characteristic among our tradesmen, and to which, no doubt, is due, to a very large extent, our present position in the commercial world. The jobber or middle man between manufacturer and retailer is a very necessary individual, and is the means of quickly distributing the articles of merchandise and expedite the placing of same into the hands of the consumer. With large capital at his command, he fills the place more satisfactorily than would a buying-club with only limited means, and a numerous and cumbersome board of directors. A buying-club may succeed for a time, in large cities, where its members are not such close competitors as are those in the smaller cities and towns. When, however, the business of the club grows, and the expense of carrying out its objects increases, a central or distributing point must be established where some one must look after the detail work, and for which work some one must be paid, we have arrived at our starting point, and are again face to face with the jobber under another name. The combination of capital to control prices, or for gain as is the case in buying-clubs, is detrimental to sound business conditions, and must, in the end, fail. Any condition that gives money greater power than it is entitled to, brings suppression to those with limited means, and makes it more difficult for them to gain a livelihood. Money is entitled to a legal rate of interest, whether loaned on straight interest, or invested in merchandise—no more. To give to some special privileges because of monetary advantages, will lead to class formation—the poor becoming poorer and less independent, and the rich, richer and more powerful, a condition with which this great republic of ours is now wrestling, and which threatens to undermine the very foundation of our government.

The special privileges granted by some of our manufacturing pharmacists to those buying in large quantities is already having its bad effects, establishing an unhealthy rivalry between such concerns. The plan will no doubt be dropped before long. One price to all is the right thing. This will draw more attention to quality of goods. Co-operative buying is directly in opposition to the principles of the N. A. R. D., so strongly endorsed by the rank and file of our vocation. Let us be consistent. No one who is opposed to the granting of special privileges to combinations of capital can conscientiously endorse the objects of buying-clubs. If the accumulation of the almighty dollar is the chief object of our existence, then let us use every means in our power and at our command and work to that end, letting our less fortunate brother do the best he can and take care of himself. Fortunately the above is not true. Under our Constitution every man is granted the same rights in the pursuit of happiness and the gaining of a livelihood. One man's dollar is worth as much in proportion as are the thousand held by another. Equal rights to all with special privileges to none is sound doctrine. Live and let live is more conducive to genuine happiness and contentment than a weakness for avarice.

The question of co-operative buying is a moral one, and cannot be controlled by law or resolutions. In this free country of ours we can legally go into such an arrangement. But I believe it should be the duty of our Association to put its stamp of disapproval on the scheme.

Mr. Hynson resumed the chair.

Mr. Weinstein wanted to know if the two gentlemen whose papers had just been presented were retail pharmacists. The Chair said that Mr. Mittelbach was, but Mr. Kline was a wholesale druggist.

Mr. Chas. R. Sherman, of Omaha, took up the discussion of these papers holding such opposite views in some respects, and expressed his concurrence in the views in opposition to the system of co-operative buying advocated by Mr. Kline, and gave him credit for good faith in his statements. He did not think this was a subject for the moral code, or the constitutional code, or any other code, but one of practical common sense, and he believed that a buying-club would not work out in the end. He proceeded to argue the question at length, and went into the details of buying—quoting prices, quantities, etc., and giving other practical details—and illustrated how it sometimes becomes a nuisance to those belonging to such a club, by reason of imposition upon good-nature by others.

Mr. F. M. Apple, of Philadelphia, said that in reading the history of the late Marshall Field, he found that his great house in Chicago at one time came to the point where they determined to change their policy as to manner of conducting business, so they proceeded to weed out their customers who were slow to pay or shaky financially, and discouraged their buying, but encouraged all those who had paid their accounts promptly. It was the same way with the buying-clubs; they had now come to the point where they were no longer willing to help pay the jobber for his losses on men who did not pay up, or paid so slowly that it did not pay to have them on their books. Referring to Mr. Kline's paper and his remarks about the N. A. R. D., he said there was a buying-club in Philadelphia before the advent of the N. A. R. D. The buying-club there had been a moral "Big Stick" in having the serial-numbering plan adopted. Another thing, the "P. A. R. D." had demonstrated the fact that the druggists could be brought together and held together as brothers in a common cause.

The Chair noted the presence of Mr. Thos. F. Main and Mr. Thos. P. Cook, of New York City, and others that could doubtless say something interesting on this proposition, and said the Section would be glad to hear from them; but these gentlemen either did not care to speak or were too modest to air their views.

Mr. M. I. Wilbert, of Philadelphia, briefly discussed what he termed the competition from wholesale houses that the retailers in the larger cities, and in some of the smaller cities, had to contend with, where the wholesale houses were carrying certain retailers in the community in competition with pharmacists who were accustomed to pay their bills promptly, and in many cases to these same wholesale houses.

The Chair expressed the opinion that if any good was to come from this discussion some motion or resolution should be offered on the subject, so it could be referred to the Association in general session for action.

Mr. Knox wanted to hear from other "promoters" of buying-clubs, but the discussion was practically ended.

Mr. Alpers pointed out that some years ago he had read before this Section a paper in which he took the position that the selling and buying of goods was a local affair and should be left to local conditions, and the paper provoked severe criticism at the time. To-day the same subject was being discussed in a natural way, like any other subject, and he thought this a decided advance in the treatment of such questions. It was natural, he said, that the wholesaler should look upon buying-clubs with disfavor, because he sees in them a possible danger to his business. On the other hand, it is natural for the retailer to look on them in a favorable light. He was personally very much in favor of them, even for the smaller cities, concerning which he gave some blackboard illustrations going to show how even small clubs could be made to work out for the benefit of pharmacists thus located. In the larger cities, as New York, it was often advisable to have a number of clubs, as better conserving the convenience of all parties. Mr. Alpers then proceeded to give in detail somewhat of the organization, policy and practical work of the New York Consolidated Buying Club, one of the largest buying-clubs in the United States, of which he at one time happened to be secretary. This club was in existence before the days of the N. A. R. D., and is in a flourishing condition to-day. The club is not really a buying-club, in the strictest sense of the term, as they sell goods to anyone. The membership is limited to 200, and as soon as one man steps out another takes his place, but only after satisfactory evidence as to his financial standing, etc. The club has a working capital of $60,000, and last year it did a business of over $700,000, thus turning its capital over about twelve times within the year. The club pays cash for everything, and about four per cent. is added for expenses. All the employees are on a salary. The advantages are great in many ways, though they have their difficulties, of course, owing chiefly to the different methods of business pursued by different members on the Board of Directors, but they do not endanger the safety or prosperity of the club in any way.

Mr. Mason, of Detroit, suggested that Mr. Avery, of Chicago, had given this subject a great deal of thought, and was the author of a resolution passed at Chicago in regard to it, and he could doubtless say something of interest. Mr. Avery, however, said he was not prepared to say anything at this time, and was merely an interested auditor.

On motion of Mr. Alpers, the several papers on co-operative buying were ordered received, to take the usual course.

The Chair stated that in the absence of Mr. George C. Bartells, of Illinois, who was listed on the program for a paper on commercial ethics, this paper would be passed.

The Chair then called on Miss Charlotte E. Stimson, of Chicago, to read a paper on women in pharmacy, which he said she had prepared at his earnest request. Miss Stimson presented her subject as follows, receiving the hearty applause of the members:

WOMEN AS DISPENSERS AND UNPHARMACEUTICALLY TRAINED SALES-WOMEN.

BY CHARLOTTE E. STIMSON, PH. G.

We deeply appreciate the courtesy the American Pharmaceutical Association has paid the women pharmacists by giving us an opportunity to say a word for ourselves under the arranged titles of "Women as Dispensers" and "Unpharmaceutically Trained Sales-women."

It is rather a delicate subject for us to speak upon, ourselves, and modesty forbids us to say all that we might like to say, yet I feel that I can safely mention that while there is much prejudice against women at the prescription case and behind the drug-store counter, this prejudice is held only by those who have never employed nor worked with a woman in these capacities.

Most women prescription clerks are of an earnest and intelligent class, and where earnestness and intelligence are, there will you find, also, a high degree of thoughtfulness, exactness, neatness, and a strict adherence to conscientiousness, all of which are very necessary qualifications in one to whom we trust the preparing of the health-restoring compounds to be administered to our loved ones who are ill.

The above qualifications also insure a practice of economics and care, which aids not only the ethical but the commercial side of our profession. Permit me to quote from Chas. R. Sherman, of the Sherman and McConnell Drug Co., of Omaha, Neb. He says: "The experience of our firm in employing women as assistants, in the dispensing, office and sales departments, has been most satisfactory, in fact, at times it has seemed that we could not well have run our business without them. The well-known scarcity of good drug clerks, as well as clerks in every other line, has naturally and most tardily turned the attention of employers to the army of capable young women who wish to become self-supporting. There still exists in many quarters a prejudice against the employment of women in any capacity, but this feeling is found generally with those who have had no experience in this line. We have found that as regards the physical capacity of women to stand the reasonable requirements of pharmacy, woman compares favorably with man—as to accuracy, reliability and loyalty, she is fully his equal.

At the present time we have one woman prescription clerk, who is both a graduate in pharmacy and a licentiate of the State Board, who has been with us for a number of years, and whose work compares favorably with that of any male clerk. Her work with us has been entirely in the prescription department, as she was a legally qualified pharmacist when she came to us. She performs all of the duties that are required of any other employee in that department.

Our book-keeper is a woman, who has held the position with great satisfaction to ourselves, and has not only mastered the correct copying of names, addresses and amounts, but has proven herself capable of taking up the burden of book-keeping with all that it implies, and has also, in quite a degree, mastered the matter of prices and technical names, as well as keeping in touch with the credit of our numerous patrons.

In our store the duties of our stenographer include the opening of the mail and the entry of credits for remittances and mailing receipts for same, etc., the daily making up of the bank deposit and taking same to the bank, and many other duties which in many stores are performed by one of the proprietors.

As sales-ladies at the counter, our experience has been equally gratifying. Some of our most popular clerks are young ladies, and we notice that the sales-tickets they turn in at night foot up nearly as much as our very highest grade male help. One of our sales-ladies has been with us eight years, and she still looks happy.

At our warehouse and laboratory, which are near our store, a woman has charge of the plant, receiving all goods and checking the invoices, as well as being accountable for the condition of the stock, as to cleanliness and order. The morning cashier arrives promptly at 7 o'clock, and carries the key to the store, leaving at 6 in the evening, while the afternoon and evening cashier arrives at 12 : 45, carries a key and closes the store at 11 : 30.

We do not wish to make the statement that women on the whole are more accurate, more tidy, more reliable or more honest than men, but we are positive in the statement that as many accurate, reliable, honest and capable ones can be found, and that generally speaking there is quite a difference in her favor in the point of reliability and steadiness. A most frequent fatality which seems to overtake young women is getting married, and we are sure that no gallant member of the male sex will complain at this."

This comes from a man who is president and secretary of a company which has for years employed in a prominent pharmacy women-prescription clerks and un-pharmaceutically trained saleswomen; therefore "he knows whereof he speaks," and his words show to what a great extent trust and confidence is placed in women employees. Such evidence, and from such a man, argues more for women in a pharmacy, and is more convincing than all we could say, or would, in our modesty, dare say for ourselves.

The Chairman asked Mr. McIntyre to take the chair while he made some comment on this paper. Mr. Hynson then proceeded to pay high tribute to the ability and fidelity of some young women employed in his establishment in Baltimore, one of them engaged in his laboratory and another as stock-clerk. His experience had been of a most satisfactory character, in the main. He believed that the matter of scarcity of drug clerks was destined to be solved largely by the employment of women assistants.

Mr. Hynson resumed the chair, and Mr. Sheppard, of Boston, gave his testimony to the very satisfactory service he had had in the employment of women assistants. He hardly thought, however, that they should be employed as clerks in a small store, but it was all right where there were four or five others. He believed there was a place for women in the drug stores.

Mr. A. H. Webber, of Cadillac, Mich., related his experience also. He said he had at one time a young lady as stenographer and bookkeeper and cashier, and who performed other duties, and he paid her $10 a week for doing all this work. He gave her so much work that she broke down, and he had to pay a man $75 a month to do about half as much as she did. But the young woman had regained her health and was back again. Mr.

Mason wanted to know if he paid her the same salary as before, and Mr. Webber said yes, but he "expected to raise it next week."

Mr. Benfield, of Cleveland, also spoke in praise of women assistants, as did Mr. Alpers also, who said he, too, believed they were destined to do much towards solving the vexed problem of scarcity of drug clerks.

Mr. Hallberg spoke of women as pharmaceutical students, and said their intensity of application and anxiety to succeed were, upon an average, greater than that of men. Their manual dexterity was also pronounced, and they could roll out a lot of pills or make a mercurial ointment as quick as the best; and if they blistered their hands they said nothing about it, which was more than he could say for the men students.

The General Secretary agreed with Mr. Hallberg in his estimate of young women as students. Their experience with them in the Maryland College of Pharmacy had been very satisfactory, and it was a pleasure to teach them. He was emphatic in the expression of opinion that when women—whether in the drug business or any other business—proved themselves as capable and performed the same service as men, they should receive the same compensation.

Mr. Sherman, of Omaha, said that since he had been on the Board of Pharmacy in Nebraska, he had found that the women applicants for registration invariably obtained high marks, away above the average of the men.

On motion of Mr. Alpers, the paper last read was received and referred for publication.

The Chair called for nominations for officers of the Section for the ensuing year.

Mr. Knox stated that having been in a position to know something about the work of the Secretary of the Section during the past year, and knowing how well it had been done, it gave him great pleasure to nominate Mr. H. D. Kniseley, of Indian Territory, for Chairman. This motion was seconded by Mr. W. C. Anderson.

Mr. Hallberg nominated Mr. Charles E. Ward, of Denver, for Secretary, and this motion was also seconded by Mr. Anderson.

As one of the associates on the committee, Mr. Mason nominated Miss Charlotte E. Stimson, of Chicago; Mr. Hallberg nominated Mr. F. M. Apple, of Philadelphia, for another, and Mr. J. R. Francis, of Indianapolis, for the third associate. These nominations were duly seconded.

On motion of Mr. Alpers, the Section then adjourned.

SECOND SESSION.

The second session of the Section on Commercial Interests convened in the assembly room of the Hotel Claypool on Friday afternoon, September 7, 1906, at 3:30 o'clock. The meeting was called to order by the Chairman, Mr. H. P. Hynson, of Baltimore, who said:

The Chairman: Gentlemen, we have a great deal to attend to. We have a select few here who are interested in the work of the Section, and I think we had better proceed. If there is no objection we will begin where we left off. I think that is the proper thing to do. But on this occasion I would like to ask the indulgence of the Section on behalf of Mr. Freericks, who has been interested especially in regard to co-operative fire insurance, and through the courtesy of Mr. Mason, who is entitled to the next place, he will read a short paper upon the subject.

Mr. Freericks: Gentlemen, I desire to express my thanks for the courtesy shown by the Chair, the assembly and by Mr. Mason, who I understand is to take the first part, in allowing me to present my paper this afternoon. My paper, a short one, is on the subject of fire insurance—druggists' fire insurance—and expresses but a few thoughts. It is not constructive in nature, but is in answer more to queries that have often been put to me as to what is wrong with the present fire insurance companies, and I trust your patience will not be taxed too greatly in listening to the few words I have to say on the subject.

FIRE INSURANCE—ITS PRESENT STATUS. WHAT THE AMERICAN DRUGGISTS' FIRE INSURANCE CO. WILL DO.

BY FRANK H. FREERICKS.

Fire insurance, unlike most things obtainable for money, is not something which is expected to bring a return on the premium paid. It in fact is a tax on owning property, giving assurance against financial ruin from fire loss. Like taxes, insurance premiums are paid to provide an indirect benefit, and like taxes, the premium rate should be kept within reasonable limits of what is actually needed to carry out the intended purpose. As business men would regard the question of taxation, so should they regard the cost of fire insurance. Being a business matter, a few moments may, therefore, well be given it by those who are here assembled for the consideration of commercial problems.

The insurance business of this day presents to the observer two defects, both of which have come to be accepted as of course. They are in fact evidence that the method of conducting this business has not kept abreast with the times and its ever-increasing changes. Fundamentally, the business of fire insurance is at this day conducted as it was centuries ago, and even those at present engaged in it, who have given it thought and study, are not satisfied that it has ever been conducted on proper lines. The defects referred to are:

1. That the primary object of insurance companies is profit, and not the maintenance of a fund to meet fire losses.

2. That insufficient attention is given to the classification of risks and their relative hazard.

Notwithstanding an occasional contention to the contrary, insurance must be and is inherently a matter for co-operation. Its very underlying principle is co-operation. All insurance, though carried on as an independent line of business (because of its magnitude), is entirely based and completely rests upon the co-operation, or rather attempted co-operation, of policy-holders. The very nature of the thing demands that this be the case. Insurance companies of the present time are a medium for co-operation, though a medium misused. They are clearing-houses for insurers. The money paid by policy holders is, or should be, co-operative money.

Viewing insurance premiums as constituting a co-operative fund (a trust fund), a consideration of the subject naturally brings us to regard those who are charged with the trust, and here we find the first defect of the present system. Without reflection it must be apparent that the very first requirement among the duties of a trusteeship is totally ignored by insurance companies. They have reduced the trust to a matter of private enterprise and gain. The medium for co-operation (insurance companies) ignoring their true mission, look primarily to profit for themselves and consider as of secondary importance their true and correct purpose, that of providing from among those who insure a fund sufficient to meet fire losses and the expenses justly incident thereto. The question with insurance companies to-day is, how much money they can make out of it, and it is not as it should be—how much money is needed to pay the losses incurred by our policy holders, by those whom we are supposed to serve and represent in co-operating.

The second defect referred to is really an outgrowth of the first, maintained because it best serves the purpose of those who profit thereby. It exists primarily for the reason that the essentials of true co-operation are not taken into account. These essentials, if not found, make every attempt to co-operate a mere sham. As we see them, having reference to insurance, they are:

1. A common interest.
2. The same or similar surrounding conditions.
3. The same kind of subject-matter.

While it is undoubtedly true that the subject-matter of insurance is in every case property, the difference in the nature of property and the difference in conditions surrounding it are so varied, that a common interest must of necessity be totally lacking. There is no common interest between the owner of drug-store property and that of an oil refinery. These interests from an insurance point of view are opposed to each other. The insurer of drug-store property should as a measure of self-protection oppose every attempt at co-operation in fire insurance by the oil refiner or every other owner of property more hazardous than his own.

Joint insurance by these various interests is an erroneous endeavor to co-operate. It in fact ceases to be co-operation, and is nothing but a safeguard for the owner of more hazardous property at the expense of the owners of less hazardous kinds.

These errors which we have attempted to point out in the existing methods of fire insurance business are of financial import to all druggists of the country, as insurers, and for the common good, none should fail to aid in providing a proper remedy. Druggists thoughtful of the matter have for years understood and sought to remedy the existing evil. In one instance they have been successful, and this instance serves to prove what has been said. (The Retail Druggists' Mutual Fire Insurance Company of Ohio is annually saving and earning its policy-holders 50 per cent. of their premiums). Generally, however, the various efforts for honesty, equity and application of correct principles in protection against fire loss, have failed because these efforts have been local and the financial requirements under insurance laws have been too great to be met by localized effort. But, local agitation has nevertheless served its purpose, and as with all matters and questions founded on right, success in a larger way, is now to be its result.

Years of agitation in various parts of the country have at least culminated in an effective and forceful effort to provide for the druggists of this country, insurance which will not only be equitable in cost and founded on correctly applied co-operation, but, which will be safe, because fortified with ample capital—honest, because losses will be adjusted with fairness and despatch. The American Druggists' Fire Insurance Company with its incorporators including the names of men, who are best known among American pharmacists for ability and integrity, with its stockholders limited to such as are pharmacists, with its affairs exclusively under the control of those who are to be protected, constitutes a guaranty to all druggists of the land, that with respect to their interests, true and correct fire insurance will be obtainable; that, hereafter, they will not need to wait a year for adjustment and then be compelled to accept 75 cents on the dollar for losses incurred.

Statistics and practical experience both prove that drug-store fire insurance can be conducted on 50 per cent. of the premiums now charged. This saving under the auspices of the American Druggists' Fire Insurance Company will go to druggists in the form of a lower premium rate and in the form of earnings on stockholding. It is the intention to make a reduction of 25 per cent. in the present rates for the equal benefit of all druggists, be they stockholders or not. Out of the balance of the net savings, which will be the earnings of the company, the stockholders, those druggists who enable the company to do business by advancing the necessary funds, will be paid a large dividend on their investment, thus reducing their insurance to 50 per cent. or less, of its present cost, in proportion to their stockholding. The stock is open for subscription to all druggists. Every one has had, and now has, an opportunity to secure for himself insurance at a reasonable rate. The incorporators of the company have been careful to provide an equal opportunity for all. Stockholding is limited, and every one has the same privilege with regard to it, so long as the stock issue lasts, and herein is assured the perpetuation of those principles of equity and justice which have given life to the company.

Nearly one-half of the capital ($200,000) of the company is now subscribed, and we may confidently look to have the subscription completed and the company well under way in business before the end of the present year. To members of this Association we can only say, that in stock subscription it must be a case of first come, first served. It is up to them to act. To the Commercial Section of the American Pharmaceutical Association and those who guide it we would say: Be informed as to the future course of the American Druggists' Fire Insurance Company. It is to further the purpose of this Section, to know that the affairs of the American Druggists' Fire Insurance Company are always conducted in the interest solely of retail druggists. Thus will it serve itself and every druggist in the land.

The Chairman: You have heard the paper, what is your pleasure?

Mr. Claus moved that it be received and referred.

Mr. Sherman: Would one necessarily have to own stock in order to get insurance?

Mr. Freericks: Not at all.

Mr. Sherman: How much do you contemplate lowering the premiums to make the stock certainly profitable?

Mr. Freericks: The intention is to make a 25 per cent. flat reduction without regard to profit. We know this will leave an ample profit for the stockholders.

Mr. Claus: I should like to ask if every State has a different rate of premium for the insurance?

Mr. Freericks: Not only every State, every city, every community has a different rate. That rate is fixed by what is usually known as the Board of Underwriters.

Mr. Jos. Weinstein: I would also like to ask a question. How will the company cope with the situation in New York, where it requires $200,000 indemnity or bond to do business in that State? Was any provision made for that?

Mr. Freericks: The law of New York in regard to stock fire insurance companies is that they must show a certificate from the Superintendent of Insurance in the State in which they are incorporated of $200,000 of assets for the safety of the policy-holders, and thereupon they are given opportunity to do business in New York.

The Chairman: Any other remarks? I think the subject is one we should all understand. If there are no further remarks I will put the question.

The question on the motion of Mr. Claus was stated, and carried.

The Chairman: I have the pleasure now of introducing Mr. H. B. Mason, who will read a paper on "Profits and Losses: Eleven Druggists and their Incomes."

ELEVEN DRUGGISTS AND THEIR INCOMES.

BY HARRY B. MASON.

I have been greatly interested during the last year in collecting from different druggists throughout the country statements indicating the gross profits and net earnings which their stores have yielded them. The facts are suggestive, and they are brought together for comparison and study in the following table:

	Annual Sales.	Cost of Goods Sold.	Gross Profits.	Total Expenses (including proprietor's salary).	Proprietor's Salary (included in expense column also).	Net Profits.	Total Net Earnings (including proprietor's salary).	Percentage of Gross Profit (figured on sales).	Percentage Expense.	Location of Druggist.
A	$25,200	$17,159	$8,041	$4,835	$1,080	$3,206	$4,286	32	19	Ohio: 10,000 pop.; 5 druggists.
B	25,107	12,336	12,770	6,000	900	6,770	7,670	51	24	Texas: 5,000 pop.; 5 druggists.
C	21,000	....	......	......	1,400	1,716	3,116	......	....	Mass.
D	17,757	11,437	6,320	5,520	1,200	800	2,000	36	31	Chicago.
E	15,557	9,922	5,665	3,878	1,200	1,787	2,987	36.4	25	Indiana.
F	8,500	5,100	3,400	2,600	1,200	800	2,000	40	30	Detroit: residence district.
G	7,717	3,999	3,718	2,683	1,200	1,035	2,235	48	35	Wisconsin: small town.
H	7,336	4,115	3,221	1,655	900	1,566	2,466	44	22.5	Pa.: 3 druggists.
I	7,331	4,423	2,899	2,463	1,200	436	1,636	40	33	N. Y.: 4,000 pop.
J	6,426	4,160	2,265	1,988	1,000	276	1,276	35	31	
K	5,890	3,511	2,379	1,155	600	1,223	1,823	40	19.6	Va.: 500 pop.; 1 druggist.

It may be well to explain one or two things about this table before offering comments on it. The "cost of goods sold," as the phrase indicates, does not represent the purchases of the year, but only such goods as the inventories show were actually sold. The "total expenses" include the item of proprietor's salary, and the latter, though given in the next column, must therefore not be added to the former in estimating aggregate expenses; the salary is mentioned separately in each case because of its intrinsic interest and importance. The "total earnings" are gotten by adding the "net profits" to the "proprietor's salary," and the object is to show the druggist's complete income from his business.

Now to comment on the table. It will be observed that the businesses are enumerated in the order of their sizes, beginning with the largest one of $25,200 a year and running down through the list to a store having annual sales of only $5,890. This range is probably typical of the great majority of stores throughout the country. With the exception of the large city establishments, which are relatively few in number, difficulty would be had in finding many stores doing an annual business greater than $25,200. The average store probably has sales ranging from seven to ten thousand dollars a year.

Any number of interesting facts can be deduced from the table, but I shall content myself with pointing out a few things only. First notice the remarkable difference in the incomes or "total earnings" which the several druggists are able to extract from their stores. A and B have annual sales practically identical in amount, and yet one makes a total of $4,286 a year while the other makes $7,670. Down the list are G, H and I with businesses of virtually the same size, but while G and H secure incomes nearly alike, I falls $800 short of what the others do. Then there is D, a Chicago druggist, with a business of nearly eighteen thousand dollars, earning only as much ($2,000) as F, a Detroit druggist with a business a little less than half as great. And so we might go on pointing out suggestive and eloquent contrasts of this kind.

Now what makes such marked differences possible? To answer this question accurately and completely would be impossible, but it is probable that part of the difference is due to the conditions, and part to the druggists themselves. First, as to the difference in the conditions: B, whose total earnings are so much greater than those of A on a business of the same size, is located in a Texan town far from the large cities, with a fertile country to draw from for miles around, and he is doubtless able to secure good prices despite the presence of four local competitors. (Perhaps the five have absorbed N. A. R. D. gospel and "gotten together!") A, on the other hand, is in Ohio, and probably has to sell "patents" at a cut price, and other goods accordingly. So it is in all likelihood with G, H, and I, whose incomes from businesses of the same size differ so considerably. And so it is also to a greater or less degree all down the list. Run along the column of "percentage of gross profits," for instance, and see how this element differs. It ranges all the way from 32 to 51.

But the marked difference in incomes is not to be wholly explained by the difference in environmental or external conditions. Reverting to the cases of D and F, where one man makes as much with a business of $8,500 as the other with a business over twice as large, we find these druggists located in Detroit and Chicago, where the prices and conditions cannot differ widely enough to account for so marked a contrast. There is a screw loose in the Chicago man somewhere. For one thing, a percentage expense of 31 on a business of $17,757 is too great. It is larger, indeed, than the 30 per cent. registered by the Detroit man, and yet, because his business is so much greater, his percentage expense should be smaller, since up to a certain point the percentage expense decreases with the increase of the business. The Chicago man should reduce expenses somewhere. He is spending too much money to run his business.

Then, too, the Chicago man's profits are rather small. He makes only 36 per cent. gross—the smallest in the table with two exceptions, and one of these exceptions is A, whose business, being larger, can stand smaller profits. Of course it isn't always easy to increase the gross profits: one's competitors have a good deal to say about that. But many druggists could get more for certain goods if they only realized the necessity of it. They sell many articles at a loss, indeed, and never know it. Thousands of druggists in this country to-day are buying a patent medicine at 67 cents, selling it at 80 cents, and blithely patting themselves on the back with the assurance that they have made 13 cents on the transaction, whereas, in fact, they have lost seven cents because it has cost 25 per cent. of the sale price to sell the article.

It is admittedly not possible as a rule to avoid such losses on "patents," but it *is* possible to avoid them with many other goods, and to make enough on such articles to bring up the average all along the line. I would commend the practice of a Detroit druggist whom I recently found to hold up before himself the ideal of making 100 per cent. on drugs and prescriptions, and 50 per cent. on sundries. Even at that his average percentage of gross profit is only 41, the small profits or even losses on "patents" bringing the figure down greatly. Druggists in the country could do considerably better than this, for my Detroit friend is in a location where there are pretty severe limitations upon the prices that may be charged.

I have come to the conclusion that the average druggist, doing a business ranging from seven to thirteen or fifteen thousand dollars a year, should, if he desires his business to pay him the income that he deserves to get from it, secure average gross profits of at least 40 per cent., and cut down his percentage expense to at most 30 per cent., and 25 per cent. if possible. With the expenses at 30 per cent., however, this means net profits of ten per cent. On a business of ten thousand, say, net earnings would then be realized of $1,000, which, added to the salary of $1,200 that we may assume the druggist to pay himself, and which is figured in the expense account, means a total income from the business of $2,200. Is not this little enough? With a percentage expense reduced to 25 per cent., which in most localities is eminently practicable with a $10,000 business, $500 more would be added to the income, making total earnings of $2,700.

Many druggists are realizing this very feasible and attainable ideal, and I think it is one which any pharmacist may hold up to himself with value. A net profit of ten per cent. is the very least that a druggist should be content with. The great Hegeman Corporation in New York, though doing a cut-rate business, realizes a net profit of 12 per cent., the percentage expense being 18 and the gross profit 30.

Just a word in conclusion about the methods of estimating such figures as are given in the foregoing table. Many druggists deceive themselves as to the facts by faulty procedures. Instead of taking inventories every year, they assume that the goods purchased represent the goods sold, whereas the general stock may have been considerably decreased or increased, and much more or less money may have been made than is thought. In a business that recently fell under my observation an annual inventory disclosed a difference of $700 in the calculations—and a differerence for the worse at that. Then again some druggists do not include in their expenses the item of interest on the investment; others own their store buildings and do not allow anything for rent; still others do not consider the very important item of depreciation, and there are doubtless few druggists, indeed, who take a proper account of all the thousand and one little expenses which are insignificant in themselves but which in the aggregate make a surprising showing.

But even inaccurate records are better than none. The majority of druggists make no effort at all to keep a record of their business, and the only means they have of knowing whether they are making money or losing it is by its presence or absence in their pockets. Often the sheriff has to come along and sell them out before they have discovered that "the drug business does not pay in these days of close competition."

The Chairman: One of the great advantages of the new style of spelling lately introduced is the power of alliteration which did not heretofore prevail. We can now say, Filosophy for Fools; and we can also say, Facts versus Filosofy. Mr. Mason suggested last year that if more facts and less philosophy could be brought into this Section more good might be done. I think he has demonstrated the fact that facts can be presented to the Commercial Section. I certainly feel grateful to him myself and I am sure the whole Section does. I should like to have your pleasure.

Mr. Sherman: It is certainly a most interesting presentation and cannot fail of being of great value to any one who will study it closely; not of as much value, however, as it would be if one could know what the conditions were that governed in the particular instances. Also just what the basis of the compilation was. While the Chairman has spoken of the value of fact as compared with philosophy, at the same time there has been a little utterance that we have all heard, figures don't lie, but the men who make them do. Now take in the compilation, the cases of A and B with annual sales about the same. We will take it for granted that the total results that he represents are accurate; the man knew what he was talking about as to his actual results at the end of the year; all of you can readily see that differences can be made in the showing by different methods. In the case of A, with $25,000 of sales and cost of the goods about $17,000, against B, with the same sales and the cost of the goods about two-thirds, it would be interesting to know just what A and just what B scheduled as being the cost of the classes of merchandise, which to them meant the cost of their goods. That is the vital point in making a profit showing. Suppose A put in all wrapping paper, twine, all boxes used in the business, and only called the expense column what we might call the fixed expenses, salary, rent, light, insurance, and the like of that. You will readily see this man will show a very much greater rate of profit than the other; at the same time, at the end of the year he has no more money left. In my estimation the one great thing in making up a tabulation of figures for any man, be his business large or small, is to start with one thing, the annual inventory and the annual statement covering just about what the banks give the bank examiner. That statement will consist of resources—two or three things—first, stock, second, fixtures, upon which you do not want to fool yourself, for they will depreciate about 10 per cent. a year; third, open book accounts, fourth, bills receivable. These are all your resources probably or usually. Now against that your liabilities. These may be various items, but generally are accounts payable for merchandise, accounts payable for expenses, and bills payable, if any, if you owe any money at the bank. Then we have the simple matter of subtracting one from the other. Another statement at the end of another year shows beyond question how much you have made, and the amount of profits will be greater or smaller according to how you handle it.

Mr. E. G. Eberle: In regard to the Texas town as against the Ohio town, Mr. Sherman has made some very good points that ought to be taken into consideration, and one feature especially in that calculation that I am satisfied makes the Texas town show up especially well, is that the bills receivable he figures in at full value. They are possibly good, especially in the small towns of Texas on account of being taken on long time. So under good conditions his bills receivable may be of full value. But these bills not being good it would change the amount of actual profit, and therefore the general condition. We have no permanent prices whatever, and in towns of that size we have no department store conditions at all, and the druggist sells a great many preparations that are generally sold in department stores and from which he receives a good profit. These are some of the reasons that would make a difference in the profit in the two states.

Mr. Jos. Weinstein: In looking over the figures I believe Mr. Mason did not take into consideration one phase of the matter; that is, how to figure the net profits. It all depends upon how much the expenditures for goods were during the year. I would like to know whether the ordinary druggist takes regular stock in his store. Assuming such druggist the first of January has taken stock and knows how much it is, and then again a year later takes stock and he finds that the figure don't diminish or increase, then knowing how much stock he bought during the year that would serve as a basis as to profits. And I want to know whether Mr. Mason has ascertained as to the druggist whose sales were $25,000, whether $17,000 was the cost of the goods sold; what his inventory was. Otherwise all the calculations will be wrong. We would not be able to make any calculation at all. He might have paid $17,000 for goods, but his stock might be worth $5,000 less. That would change the situation.

Mr. H. B. Mason: The figures in the second column represent goods sold again over the counter. They do not represent all the goods purchased during the year, but only the cost of such goods as were sold again. Of course a good many goods go into stock and are not sold, but the proper reduction was made in this case. The usual method is to keep account of the expenditures for goods during the year and subtract the amount that the inventory shows went into the permanent stock. Inventories were taken in all cases.

Mr. C. B. Lowe: Mr. Chairman, these figures must have involved an immense amount of work in their preparation, because it involved a calculation of the cost of every prescription, and that is difficult; the price of every tincture we sell, the price of everything. Now it seems to me the labor must have been enormous. I wouldn't undertake it under any consideration. I wouldn't have had time for anything else throughout the year. But if the figures are reliable, it shows the absolute silliness of trying to cut the ground from under your feet by cutting prices.

Mr. Mason: I do not see the gist of Mr. Lowe's remarks exactly, because the cost of the goods was discovered by keeping an account of the expenditures throughout the year for all goods purchased, and at the end of the year subtracting from the goods bought the amount of goods that went into the permanent stock.

Mr. Lowe: I thought you meant the cost of each sale was calculated out. I could easily see that would be a Herculean labor.

Mr. Mason: Of course this is not absolutely correct. At best the table is only approximate, but even at that it is suggestive.

Mr. Meissner: Did you base your figures upon the report that the stock remained the same at the inventory?

Mr. Mason: The inventory was taken every year to see that the stock did remain the same.

Mr. Meissner: If the stock remained the same the inventory would show the amount of goods sold.

Mr. C. B. Lowe: Mr. Chairman, I do not want to offer a vote of thanks, for that is trite, but I think Mr. Mason does deserve the thanks of this section for the amount of labor put upon this paper.

Mr. Mason: I do not rise to speak to that, nor to prolong the discussion unnecessarily, but it would interest me personally very greatly if a few of the druggists here would give an idea of what their average profits are, and an idea, perhaps, of what profits they try to get on certain lines of goods, and how far they succeed in attaining such ideals. It seems to me one of the most important commercial elements in the retail drug business is that element of profits and what profits they succeed in realizing.

Mr. Fisk: As the owner of a couple of drug stores in Chicago for several years, my custom, as is the custom of pharmacists generally, I believe, is to figure on gross profits on prescriptions of not less than one-half, and not less than one-third on sundries in general. As far as patents are concerned, of course that is another matter. Although within the last year or two, thanks largely to the efforts of the N. A. R. D., we have been accustomed to get approximately full prices. As far as my own personal experience is concerned, having done business largely in the hospital districts, I have had very little patent business to contend with. I usually estimate my gross profits at 40 per cent. of sales. I think, perhaps, that will be a fair average as the business will run in Chicago.

The Chairman: I have been accused by the great and only Hallberg of trying to make an emulsion of the commercial and the scientific sides of pharmacy. I have not found it very difficult to do. So far as this program is concerned I had less trouble to get our scientific friends to do something for this Section than the others, and I take great pleasure in introducing to you a great stranger, Dr. Rusby, of New York.

Dr. Rusby: Mr. Chairman, I feel in this place very much like a cat in a strange garret. I doubt whether there is any member of the American Pharmaceutical Association other than Chairman Hynson who could have induced me to appear before the Commercial Section. It is not because I am not interested in your work; quite the contrary. I fear, however, that I might become imbued with the commercial spirit and imbibe some ideas which might result later in my making some money; and this would be a very inappropriate thing for a professional man to do, so they say!

In presenting the subject which has been assigned to me I shall defer to the well-known commercial instincts of your body and practice economy of time. Mr. Hynson has asked me to offer "a few remarks" on the subject of the identification and preservation of drugs. Since there are something over 3,000 of these drugs which are likely to be encountered by one engaged in pharmaceutical work, I shall confine my remarks to the general principles of the subject, and will remind you, to begin with, that it would be a Herculean task for any one to attempt to learn all of these drugs individually and without system. It is true that this could be done, but at an enormous waste of time and energy. It would be like a messenger-boy or a letter-carrier trying to learn the names and residences of all of the three thousand inhabitants of a town before entering upon the discharge of his duties. A letter addressed to a person in New York city will be marked for the East or West Side, by which one-half of the area is eliminated from the search. In the same way an unknown drug which we are called upon to identify must be examined as to its being an endogen or an exogen, which at once eliminates a large portion of the articles to be considered. The postman next finds that his letter is addressed to a certain street, and his task is now reduced to a small field. The pharmacognosist similarly determines that his drug is a root, thus excluding all drugs from other parts of the plant. Finally, the postman sees that his letter is addressed to a certain number on the street; so our root is seen to contain no starch in its tissues, but to contain inulim. The postman now knows that his letter is to go to some one of the comparatively few people in the building numbered, and the student knows that the root which he is studying belongs to a very small group and can be quickly determined. If now this student has been properly educated in the few facts which enter into the problem as here presented, the determination of the specimen is the work of only a few minutes. This instruction is botanical. I introduce the term botany with some dread, lest it should excite a prejudice in the minds of some who do not understand the limited manner in which it is employed in the teaching of pharmacognosy. I wish to emphasize the fact that the amount of botany which must be taught for this purpose is very limited, but I am even more anxious to make clear the fact that this small amount must be learned thoroughly and must be taught systematically. When we teach such a subject systematically we are teaching it scientifically, and so it is clear that a moderate amount of scientific botany, as a basis for the practical identification of drugs, is an enormously time-saving method. This instruction cannot be satisfactorily given outside of a school where the proper facilities exist for doing it well and economically as to time. The difference between doing this work before going into the business of handling drugs and that of going at once into business to pick up the information as opportunity offers is the difference between accomplishing a very great amount with little expenditure of time and effort and expending a very great amount of time and effort to accomplish comparatively little. This is the one point which you, as business men, should appreciate. The same principles as to system enter into our work as teachers which enter into yours as business men. You would not think of placing at the head of your business a man who was notoriously lacking in system. Why should you think of attempting to take a short cut in preparing young men for such important and extended duties. by abandoning the principle of business-like system?

Let us now apply the same reasoning to the determination of powdered drugs, a work which as you all know, is extremely difficult for a man who has not been thoroughly trained for it. Such a man, engaged in commerce, may look at a dozen lots of powdered drugs in as many bottles, and they all appear about the same. Such differences in color and general appearance as are observed are not greater than often appear in different lots of the same article. The microscopical pharmaçognocist places a minute portion of each of these samples under a microscope. He sees in each many hundreds of minute cells, but he needs look at only one of these to eliminate one half of the vegetable kingdom from the possible sources of the article. He looks at another cell and eliminates half of the remainder, and in two or three minutes, possibly less, he has identified the drug. His ability to do this depends upon botanical knowledge, pure and simple. In the case of the whole drug, his ability depends upon his knowledge of the gross parts of plants; in that of powdered drugs, it depends upon a knowledge of their minute structure. The work is more difficult and more technical, and the botanical knowledge involved requires more time and effort for its acquirement. Its usefulness is greater in the same proportion. The percentage of drugs purchased by the pharmacist for manufacturing purposes in powdered condition is in these days much greater than that of those purchased in the entire condition. If adulteration is to be practiced, it is obvious that the operator will select a powdered drug, because it greatly lessens the probability of detection. This knowledge of histology, even more than that of ordinary structural botany, requires systematic training in school.

As you are all aware, there is at the present time, something of an antagonism between those who hold that a certain amount of school training is necessary as a preparation for pharmacy, and those who claim that young men should be admitted to the ranks on the basis of apprenticeship only. These very practical considerations are therefore submitted to you as a contribution to cool-headed reasoning on this subject. I feel very sure that the course here indicated is the only one by which any young man ought to go into the practice of pharmacy, in any branch where he is to handle whole or powdered drugs.

I have now a few words to say on the preservation of drugs, and shall, in the same way, confine myself to the general principles of the subject. Let us first inquire what causes produce deterioration in drugs. Chiefly animal attacks, especially those of insects, vegetable parasites coming under the sub-divisions of molds, mildews and bacteria, and chemical changes, due to enzymes or oxydases.

How shall we protect drugs against insect attacks? One of the best methods is by the use of naphthalin or chloroform, which by their disagreeable odor, repel the insect, or by their inherent properties, kill it. Probably a more common method, as well as a more certain one, for general use, is the application of heat, and here a caution is required. Variable degrees of heat are necessary for different periods, to kill different parasites and their eggs. Let us suppose that we must use heat carried to the boiling-point. If the drug is moist when the heat is applied, the result will be that chemical changes will be produced in it and its activity may thus be impaired. For this reason, the drug should first be thoroughly dried at a low temperature before the extreme degree of heat is applied to it; even then, the application of heat may be injurious, but when it is applied, this caution should be observed. The development of mildew and mold also depends upon the presence of moisture. These plants cannot grow unless the substance is more or less damp. This whole subject, therefore, is bound up in the four words: "Keep the drug dry." One of the most serious instances of damage by moldiness is that of ipecac. Probably one bale of ipecac in every three, which reach American and European markets, is found moldy in the center. In this case, the moisture was retained in the country where the ipecac was packed, an accident which it is difficult to avoid, even with the greatest care, in such a humid climate.

Coming now to the subject of bacteria, we note that they are often called organized ferments, while the enzymes are called unorganized ferments. Although there are some differences between the conditions favoring the development of bacteria and those favoring the development of mildews and molds, we may say of the former also that they cannot develop where there is a condition of dryness; and this is particularly true of those bacteria which are injurious to crude drugs. In the case of the enzymes and oxydases, we meet with a very different proposition, yet the result is much the same.

We notice that nature places these substances in certain cells of the plant, while those substances which they are designed to act upon are stored in other cells. Although the one substance is to act upon the other, it is to be done only under certain conditions; so little doors are formed between the two cavities, and these doors open and close automatically, as the conditions require. The conditions are, of course, different in the living plant from what they are in the dried drug. So far as the latter are concerned, the damaging activity of the ferments usually depends first upon moisture, and second, upon light, so that here again, to keep the drug dry, will result in its protection, in almost all cases, against deterioration from this cause. A common mistake among pharmacists is the supposition that dried leaves, flowers, etc., invariably fade when exposed to the light, and the supposition that if they be not kept in a dark place or in bottles of some specially colored glass, such deterioration cannot be avoided. To all those interested in this subject, I would commend the reading of a paper published recently in the Pharmaceutical Journal, and written by Mr. E. M. Holmes, the learned Curator of the Museum of the British Pharmaceutical Society, on the subject of Standardization. I cannot concur in his conclusions on this subject, but in the course of his discussion, he expresses some very important views on the subject of preserving drugs. He describes specimens of flowers in his museum, of the most delicate colors, colors known to be destroyed upon very slight changes in conditions; yet these specimens have been in the museum for a quarter of a century, and their colors are as perfect as when they were first stored there. No attempt is made to protect them against the action of light. They were placed in bottles of ordinary glass, the bottles being first thoroughly dried. After the introduction of the drug, some quicklime was placed inside of the bottle, in a leather pocket hung underneath the stopper, which latter was then sealed with paraffin. The lime, of course, absorbs any moisture which may be present, and with this absent, the colors cannot be changed. Preserved in this way, the glucosides of digitalis, which as you all know are among the most delicate of organic substances, are perfectly preserved, and the same is true of almost all similar substances.

There are, of course, special methods of preservation required in cases of certain drugs, but it is impossible to enter upon the details of these subjects in such a presentation as this.

Dr. Whelpley: The Chairman of the Commercial Section this year was discovered by the American Pharmaceutical Association at the Baltimore meeting. I happened to be a member of the Council that had in charge the election of a local secretary for that convention, and when Mr. Hynson's name was suggested by the Baltimore people, one of them prominent in the Council added to the many good things that had been said about the gentleman showing that he was suitable for the position the fact that Mr. Hynson is a good mixer. We understood what that meant, and it was fully justified by the meeting that followed. But to-day we have evidence of our Chairman being a good mixer in a different direction. He has, as has been here intimated, mixed professional pharmacy and educational pharmacy with commercial interests, and I believe in a way that we fully appreciate. In the first place he has been fortunate in selecting a gentleman who appreciated just exactly what the Chairman wanted, and who has very ably presented the subject to you.

There is only one thought I would add at this time, and that is directed to the proprietors of drug stores, especially those of you who graduated before college students had all the advantages of to-day along the lines Dr. Rusby has so practically presented. I suggest that you encourage your clerks before they enter college, provided they are with you before that time, to follow out these lines by the aid of text books; if they clerk for you while they are in school that they daily apply this knowledge as they get it; if you receive them after graduation that they continue to apply in the drug store the information they gained in college; and that you encourage them in the work of recognizing drugs. As Dr. Rusby has said, much of this can be learned in a very few minutes' time, the recognition of drugs by the naked eye under a system of classifications that is followed; and done in an institution it is a matter very easily learned. The recognition by the simple microscope is the next step; a little more difficult, but not much. The next step is the recognition of powdered drugs. That requires the compound microscope. It is there that those who lack college training will have to leave the matter in the hands of their clerks. And above all I would advise you to be careful not to follow the example of the proprietor I heard of who would not hire a drug clerk because he heard he had a compound microscope, and was afraid he would fool away too much time with the microscope.

The second topic which the speaker has brought before you, the preservation of drugs, is one to which our Pharmacopœia gives extended attention, far more attention than any previous pharmacopœia, and I fear American pharmacists are slow in recognizing this fact. The English pharmacists were quick to recognize it, and it had been in England less than a month before a very extended and exhaustive examination was made of the directions in the U. S. P. for the preservation of medicines. And I suggest that each one of you look through the Pharmacopœia and see under how many headings directions are given for the preservation of official substances; and there are various reasons which Dr. Rusby gave why medicines must be preserved.

Mr. Hallberg: Mr. Chairman, this subject may have been referred to while I was attending another section; but along that line I think that is a great omission in the Pharmacopœia. There should be lists in the Pharmacopœia giving the names of articles with special reference to their preservation. There are already one or two lists, but this particular subject should be more thoroughly covered by lists in the appendix enumerating the crude and powdered drugs, as well as certain preparations, which require special care and treatment with reference to their preservation. That would be a great aid to the student. I suggested that in a former revision, and in this last one; but no one seems to have appreciated that. When in the text, as it is, it is usually overlooked, while if it were set out in the appendix it would be of considerable value.

The Chairman: I think the members of the Revision Committee of the Pharmacopœia ought to have their attention called to this matter.

Mr. Hallberg: A motion has been suggested. I make a motion that the attention of the Committee of Revision of the Pharmacopœia be directed to the practicability of incorporating in the appendix lists of the articles of the Pharmacopœia with reference to the particular methods for their best preservation.

Mr. Whelpley: I second the motion.

The Chair stated the motion, and it carried.

The Chairman: I believe I express the wishes of the Section in this regard, that we thank Dr. Rusby for his kindness in presenting the subject to us in such an instructive manner.

I also have the honor of introducing a gentleman very well known to you, but who very seldom presents or does anything on the floor. He thinks his work as Secretary is enough for him to do. But on this occasion for the Commercial Section he is willing to tell you what he knows about the Preservation of Galenicals.

The General Secretary: When the Chairman of this Section asked me to join some other members in the presentation of this subject from a commercial standpoint, I could see some good points about it, and some that did not appeal to me. In the first place, I thought I would be attempting to tell you things you already know. It is presumed that the pharmacist in business is familiar with the teachings of the schools in regard to the preservation of galenicals. It is as a rule taken up carefully there. At the same time the subject is a broad one, and commercial success may lie in this question of whether galenicals shall be allowed to deteriorate and then be used, or kept in their original pure condition. It will only be possible to take up a few isolated cases to give force to the point I make.

If we divide the galenicals into aromatic waters, syrups, elixirs, extracts, fluidextracts, tinctures, ointments, pills and powders, we have covered the ground as to classification. I am going to begin with the aromatic waters, because they are so simple that a great many unfortunately think they are not deserving of particular attention, being merely solutions of oil in water. The only suggestion I have is to avoid the exposure of these waters to low temperatures, for the reason that the solution of the oil in water having been made at the ordinary temperature of the room, when the temperature is lowered a cloudy liquid is produced. Some pharmacists assume that the water has deteriorated, overlooking the fact that it is only a physical phenomenon caused by the reduction of temperature. As soon as it is brought back into the store the solution will return to its clear condition again, and hence we should avoid at all times exposure of these waters to low temperatures. Tinctures and fluidextracts are susceptible to similar changes of high and low temperatures. You all know that in going into a drug store you sometimes find a row of bottles of tinctures on a shelf near the ceiling, where the temperature is 10 or more degrees higher than in the lower parts of the room. Let us not overlook the fact that the tinctures were made at the ordinary room temperature, and the solvent took out of the drug what it could hold in solution at that temperature, and when you change the temperature the tincture will change. It may cause the vaporization of some of the alcohol or the temperature may have lowered materially. This accounts very largely for precipitation in tinctures and fluidextracts. It is recognized by all pharmacists. I am sure you have all heard it in the schools from which you have graduated.

It is the disregard of such little rules, if we may so term them, that very often causes damage to the preparation and carries with it commercial loss. We often wonder why a preparation gelatinizes, overlooking the fact that this change may be caused by exposure to light, and sometimes by heat; possibly, by evaporation of the alcohol which holds the astringent principle in solution. Light is in many cases as detrimental as extremes of temperature. We can see it by changes occurring in tinctures exposed to direct sunlight, when precipitation occurs. I might add in order to lessen the apparent danger somewhat, that fortunately in the majority of cases the precipitation is usually of inert matter and does not carry with it the potent constituents. That is a fortunate provision of nature. Then again the exposure of tinctures in bottles having a large air space above the liquid is a cause of deterioration which a well-filled bottle is not subject to. Fluidextracts, being more concentrated solutions than tinctures, require even greater protection against direct sunlight and extremes of temperature, and are best preserved in small bottles kept in dark and moderately cool places.

The preservation of syrups is one of the most important subjects I think, and it is safe to say that the pharmacist who pays due attention to the proper location and preservation of his syrups and ointments will reap direct commercial benefit, inasmuch as they will keep very much better. I should like to suggest, in this connection, that every drug-store should be provided with a dumb-waiter, which can be lowered into the cellar, on which the syrups and ointments should be kept.

An additional point is this: In the preparation of syrups, before putting the newly made syrup into a bottle, pharmacists should satisfy themselves as to the condition of the bottle. A great deal lies in that. It is not sufficient to rinse the old container with water, because in many syrup-bottles little fungous growths are found on the surface of the glass. Now if that bottle be simply rinsed with water a good deal of the fungus will remain and the fresh syrup being poured in, fresh food is offered these fungi and they will multiply. I would suggest washing the bottle with hot water and lye and draining it well before putting the syrup into it. If considerable water remain in the bottle it will dilute the upper layer of the syrup; and that upper layer, being deficient in sugar, is liable, of course, to undergo fermentative change, which change is progressive and will contaminate the larger quantity of syrup within the bottle.

Ointments likewise upon exposure to extremes of temperature undergo change; not so much when exposed to extreme cold as to extreme heat. The exposure of ointments to the high temperature of summer is detrimental. And also in winter when the furnace or stove is in use considerable attention should be paid to the location where ointments are to be kept. I have had occasion to notice once or twice the condition of an ointment jar in a store where I happened to call. The jar was open and the ointment was not uniformly mixed but contaminated with a certain proportion of that same ointment in semiliquid form. A small amount of the fat had melted from unnecessary exposure to heat. Such a condition is likely to happen elsewhere. Ointments should always be kept in a dry and cool place ; a damp atmosphere is conducive to rancidity of fats.

It may not be out of place to say one or two words in regard to containers for ointments. The ordinary stoneware jar is not suitable for a shelf jar for ointments, for it is not impermeable to fats. No matter how thoroughly we wash it out with hot lye, any ointment having become rancid in it and penetrated the material of the jar will never be entirely removed. Take an old jar that has been used for three or four years and the fat has almost penetrated to the outer surface and will be sure to contaminate the fresh ointment. Glass jars are better but as a rule have not been well tempered. They break or crack on washing. But there is a jar impervious to fats. That is the French porcelain jar. They are more expensive, the pound size costing twelve dollars a dozen and the half-pound seven or eight dollars. Such a jar will last a lifetime. For the purpose of keeping the new ointment sweet after the old has been taken out, whether cold cream, benzoinated lard, or zinc ointment, we should invariably wash the jar with hot lye and dry it before putting the fresh ointment into it. The two disturbing factors for the preservation of ointments are extremes of heat and cold and moisture, and the essentials are dryness and even temperature.

In speaking of pills, which I believe at the present day are not made in quantity in the drug-store as in the past, the mistake is sometimes made of putting the pills into stock bottles before they are sufficiently dry. In making up a batch of two or three thousand compound cathartic pills, as we did when I was an apprentice, they were thrown into a mixture of lycopodium and licorice where they retained their shape and were dried, so that we could take them out, say after three or four weeks, and then they would keep in a bottle for years, provided they were not exposed to a damp atmosphere. But the fact that so few pills are made at the present time does not make this point as important as it was years ago. Still it is worth mentioning. It is only by drying out the excessive moisture which causes the trouble that pills can be preserved. The growth of mold and similar conditions will arise on the pill as on the surface of a crude drug. Powders are fortunately not subject to the same changes from extremes of heat and light as other preparations. Perhaps the only objection to exposing them to higher heat is the loss of some volatile constituent.

The effort of the Chairman to bring about what he considers a perfect emulsion of commercial and professional pharmacy would no doubt be a success if the other two component parts on the program were here, but I understand they are wanting. In order that the emulsion may be complete, chemicals and sundries should be represented equally. The two gentlemen who were to speak on those subjects are not here; but we often have to deal with a cracked emulsion caused by the lack or excess of one of the components, and so this intended emulsion may also be found not entirely homogeneous.

Mr. Ebert: Mr. Chairman, I was impressed with the fact in listening to the remarks of Professor Caspari that he served his apprenticeship with some old-fashioned apothecary. The old-time apothecary learned these facts that were handed down from time immemorial to the time when the old-fashioned apothecary ceased to exist, and he seems to have been with one of them. He just omitted in regard to ointments the mere fact which I am sure he knows well, as to how an ointment, after being placed in these jars he speaks of, should be taken out of the jar. The old-fashioned direction was to take the spatula and not go down in the center and take out some, but the direction was to take the spatula and commence on the side and go around and keep the ointment always on a level. Is that so?

The General Secretary: That is undoubtedly an important point.

Mr. Ebert: Now that is one of the great features of preserving ointments. The way to do it is to take the spatula and take out the ointment in such a way that the level of the ointment will be the same. Then there will only be a small surface exposed to the atmosphere.

In regard to pills, I have been in the habit, and am still in the habit, of making three or four thousand compound cathartic pills, and I think that the way suggested is the best way to preserve them.

Mr. Seaman: In my store I use cut loaf-sugar in making syrups and they keep better. The point was given me by a drummer. He said if I would dissolve a pound of granulated sugar in the requisite amount of water I would see a deposit in the bottom of it, but if I took loaf-sugar it would not be observed. I tried it and I have used cut loaf for all my syrups, fruit syrups, and for everything sugar goes into in the store. It seems to be a point worth bearing in mind. In my town it is almost impossible for me to get cut loaf-sugar, and I simply order three to five barrels in New York City and have it sent up. I don't know whether it amounts to anything or not.

Mr. Hallberg: When you arouse the spirit, then you will never get rid of it. Now that is my strong point. This is, I consider, a most important point to present to the pharmacists of this country, to practicing pharmacists, and if there is anything I pride myself on in my career it has been to instill into the young who go out to practice pharmacy the necessity of carefully preserving the preparations they make. It is certainly a commercial proposition. Go into the average drug-store and you will find about twelve stock bottles of syrups, glass-stoppered bottles, on the shelf. Now there are not more than three syrups that should be kept in glass-stoppered stock bottles on the shelf, and they are Syrupus, Syrupus Tolutanus and Syrupus Zingiberis. Every other syrup should be kept in ordinary stock bottles without any glass labels. When the syrup is prepared the bottle should be washed out with boiling water, rinsed, and the syrup poured into it and the bottle completely filled. They should be as small bottles as possible and they should be kept in a cool, not in a cold, place.

You sometimes see rows of glass-stoppered bottles for fluidextracts. No fluidextract should be kept in a glass-stoppered bottle. When not kept in glass-stoppered bottles on the shelf there is no temptation to mix them. No two different lots, whether bought or prepared, should ever be mixed, because there is always a slight variation in the alcoholic strength of the menstruum and that will induce precipitation. In the same way only one oil should be kept in a shelf bottle and that is the oil of turpentine. No other oil should be kept in a shelf or glass-stoppered bottle. In the place where I learned the business every oil was kept down in the cellar under the stairway. That may be an extreme position but nevertheless it is good.

When it comes to ointments, they should be kept in glass jars. They need not be scalded out with hot lye ; they should be wiped out with terebinthinated sawdust. That is one of the best cleansers we have. If the oil of turpentine odor should remain and be objectionable then use plain sawdust.

I would like to inquire why a pharmacist should spend from five hundred to five thousand dollars for a refrigerating apparatus that in many sections stands without taking in any money six months in a year—why he should not invest a few dollars in a refrigerating apparatus in which he could keep fixed oils and ointments. I know one pharmacist who follows the old plan of a week or two before the holidays, when the hogs are slaughtered, getting leaf lard, rendering it and benzoinating it and putting it away in jars covered with paraffine papers and keeps it in the summer time in an ice box.

I have seen so many preparations spoiled, and yet the average druggist does not care about throwing them out. I have seen a druggist get a prescription, go to the shelves, juggling a bottle of compound syrup of squill which made it foam, showing that it was fermented, and yet put it in the prescription. These things are wrong, and I think the druggists ought to recognize that it is not the amount of money that is put into their pockets as much as it is the amount of money that can be kept in there, and proper methods of preserving preparations would make, it seems to me, one of the best and most legitimate methods whereby to save money.

Mr. Sherman : Mr. Hallberg is splitting hairs and making fish of one and fowl of the other. I hope he will take a new and more prismatic view of life from now on, and remember that through the virtue of some psychological and to him him negligible reason, his Omaha friend has for many years always carried out the ideas he has given us in regard to keeping syrups, etc., and carrying out the idea of not having uniform packages, but packages suitable for each individual thing. My system is a lack of system as to labeling and size of package, so that a particular package can be readily found. A certain sized package for iodine ointment, another jar for ointment of iodoform, another suitable pail for zinc-oxide ointment, for benzoinated lard, etc.

The Chairman: I want to say that the emulsion may be cracked, but the constituents are here. I have two excellent papers from Mr. Beringer on the identification and preservation of chemicals, and from Mr. Busch on sundries; while they are excellent papers the absurd rule will not permit them to be read now; they will be read by title later.

Mr. Seltzer: Mr. Chairman: I want to say just one word about sugar. The sugar manufacturers put upon the market a sugar for pharmaceutical purposes especially in one hundred-pound bags, free from coloring matter, and much cheaper and more convenient than loaf-sugar.

Mr. Ebert: Mr. Chairman, on the sugar business, I want to give you the difference between loaf-sugar and granulated sugar. In making sugar, the evaporation of saccharine juice is produced in a vacuum pan. When they come to make loaf-sugar they throw off the solution from the vacuum pan into crystallizing molds, and it crystallizes there, and usually that sugar is the first and the best of the run. Then subsequently as they go along they run that off into granulated sugar, and you do not get quite as pure a sugar in the granulated, because it is the residue in the manufacture of the loaf-sugar, partially, and would be contaminated with a little organic matter and flocculent matter. It has also a little more color, and for that reason they used to use a little ultramarine blue for the purpose of taking away that color, and we have had granulated sugar in the market that contains this blue. However, that has been done away with to a great extent, and we can now obtain for a little more money granulated sugar absolutely just as pure as the loaf-sugar, and it is certainly much more convenient. Havemyer & Elder prepare just such a sugar for druggist's use, and you can buy it in the large cities. I have never had any difficulty in getting it.

The Chairman: I believe now the report of the committee which was authorized to consider certain matters at the last meeting could properly be brought up at this time, and if there is no special reason for discussing the report, which is merely a recommendation, if it answers the purpose I think we might avoid discussion. I do not want to shut you off, but we have three other papers by gentlemen who are here, so let us get through with the report as quickly as possible. I will call upon Mr. Selzer to read the report.

Mr. L. A. Seltzer, Chairman of the Committee, read part of the report and the following resolution:

RESOLUTION AGAINST PARCEL POST LEGISLATION.

WHEREAS, The distribution of merchandise has become an important question to the people of the United States, as shown by the attention bestowed thereon by the Congress, and also by the General Assembly of many States, and

Whereas, The distribution of merchandise imposes many conditions on the different branches of trade, which do not exist in the methods for transmission of communications, or dissemination of news; therefore, be it

Resolved, By the American Pharmaceutical Association that a distinction should be made between these two operations, and that legislation by the Congress should be directed to the readjustment of the laws, rules and regulations of the Postoffice Department so as to secure the greatest possible benefit to the people by improved service, limitation of the privileges of second-class matter so that it shall more strictly conform to the laws and regulations, so that the long-sought and long-ago-earned reduction of the letter postage to one cent per ounce may soon be established, and

Whereas, Certain corporations now enjoy privileges because of their gigantic operations, not available to ordinary dealers, and depend on the extension of these special privileges to still further encroach on the established methods of trade; therefore, be it

Resolved, That the State Pharmaceutical Associations and all local branches of the American Pharmaceutical Association, and all members of this Association individually, and all retail and wholesale druggists, direct the attention of the Senators of their respective States, and their Representatives in Congress to protect the people from further encroachment of the legitimate functions of the Postoffice Department, by opposing with all their power the so-called Parcel Post Legislation, because such encroachment would be of no real benefit to the people at large, and would simply aid in extending the business of gigantic corporations to the detriment of the great army of retail distributors of merchandise, constituting about one-fifth of the entire population of our country, and be it further

Resolved, That the Congress enact such further legislation as may be required to prohibit special privileges, rebates, etc., by the common carriers and express companies; and further

Resolved, That the rules to be adopted by the departments of the Federal Government for the interpretation and enforcement of the Pure Food and Drug Law be so constructed as to require all drugs sent through the mails strictly to conform to the letter and spirit of the law.

Mr. Meissner: Mr. Chairman, I move the adoption of the resolutions.

The motion was seconded.

Mr. A. E. Ebert: Mr. Chairman, I hope that resolution will not be adopted. I am opposed to the mail-order business, but I really think we should not as an Association try to prevent evolution, whatever that may be. I could not thank Mr. Mason when he read his paper on evolution three years ago; it hurt me. This hurts me about these mail-order houses; but really, gentlemen, we ought not as an Association to oppose this. If it is best for the country that these houses should exist then let them exist. I fought the department stores in Chicago, spent my money and time, and what was the result? I do not think this Association as an association ought to take such a position. I am with you. I feel just as you do about it, but what good is it. We have got to endure it. Evolution has made me poor, but I have got to take my medicine. I do not like to see the American Pharmaceutical Association try to stop the wheels of evolution. That is all I stand here to say. If the people of this country want cheap transportation by mail, and every other country has it, why should we as an association say we should not have it. It won't do any good. It won't do any good. When Mr. Mason read his paper about the evolution we would have felt angry at him, but I have seen what we have come to since.

The Chairman: The motion is on the adoption or rejection of this recommendation of the committee. The committee has formulated a resolution which, if adopted here, will be a recommendation to the general Association for adoption. That is all we can do.

Mr. Wm. C. Anderson: Mr. Chairman, I will agree that we should take our medicine if we have to. This is a matter of giving medicine to the retail trade that is not good for it, and I do not believe we should take it until we have to take it. It would be a great injury to the retail trade, not so much in the large cities as in the country. I believe as a national organization we ought to put ourselves on record as opposed to it.

Mr. Benfield: In those stores where they have post-office substations there is hardly a week goes by that we do not send money orders to these great mail-order corporations from our own store and over our own signatures, and in one instance a physician sent an order.

Mr. C. A. Mayo: Mr. Chairman, Mr. Ebert has said, if the country wants this, let them go ahead and have it. That is what we are trying to do now. We are trying to convince Congress that we do not want it. If everybody that does not want it makes a vigorous protest we will convince Congress that the country does not want it. For that reason I think every individual protest counts.

The Chairman stated the motion and it carried.

Mr. Seltzer then read the second resolution:

RESOLUTION ON THE ENFORCEMENT OF THE PURE FOOD AND DRUG LAWS.

Whereas, The rigid enforcement of pure food and drug laws reveals possibilities of undue hardship to conscientious druggists owing to the faulty construction of such laws, it is our opinion that although it is the desire of our Association to assist in all commendable efforts to insure the sale of drugs of the highest degree of purity and value,

Resolved, That our Legislative Committee be instructed to co-operate with similar committees of State pharmaceutical associations, in advising such provisions in new State enactments as well as amendments to existing laws, as may secure their enforcement without subjecting pharmacists to unjust prosecutions.

Mr. O. F. Claus moved its adoption. Seconded.

Mr. Hallberg: Gentlemen, you will remember that by direction of the Association in general session a Committee on References and Resolutions was appointed. Now I would like to ask whether this last subject, for example, if acted upon favorably by this Section would be brought into the general session independently by this Section or referred to this General Committee on Resolutions. The General Committee on Resolutions has already a resolution covering the first subject. Would it perhaps expedite matters if this resolution were referred to the general committee, the determination being that there should be one member for each Section?

The Chairman: I believe these gentlemen are willing to have it go to that committee. It seems to me the proper way on all resolutions, but we want you to take their report—that we have endorsed it as a Section.

The Chairman stated the question and it carried.

Mr. Seltzer next read the following:

Whereas, The general expression of satisfactory experience of members who have in their employ women pharmacists, is worthy of more than passing comment. Considering the present scarcity of assistant pharmacists and the meager prospect of any immediate improvement in this respect, we believe the ultimate solution of the problem lies in the encouragement of especially qualified young women to enter on the occupation of pharmacy. Therefore, be it

Resolved, That wider publication be given to the favorable reports obtained from sources where women pharmacists have been employed.

The Chairman: You have heard the resolution; what is your pleasure?

On motion of Mr. Anderson it was adopted.

Mr. Seltzer read the following Resolution in Relation to Mutual Fire Insurance:

We consider this a matter of highest importance, and worthy of continued interest by our members. Reports from states where such companies have conducted business afford evidences of successful management. It is believed by your Committee that conditions existing in many states where stringent insurance laws retard formation of mutual companies it may be more expedient and profitable to co-operate in the efforts of druggists to establish a national stock company, managed by druggists, to protect druggists exclusively, and we would recommend that the Commercial Section provide for a more thorough investigation of the subject of fire protection through co-operation.

The Chairman: You have heard the resolution as recommended; what is your pleasure?

Mr. Seltzer: We recommend that the Commercial Section provide for a more thorough investigation of fire protection through co-operation.

Mr. Avery: Mr. Chairman, I would recommend that we postpone action upon this question until we hear the report on the next proposition, and that the two be acted upon together.

The Chairman: If there is no objection to this we will postpone action until the next proposition is read.

Mr. Seltzer submitted the following recommendation on Buying Clubs:

Your Committee regard with great interest the reports from cities where experience has been gained from co-operative agencies for manufacturing, buying and selling to members of buying-clubs.

We consider the subject of greater scope than can be properly considered at a brief session of a convention.

We would, therefore, recommend that a committee be appointed to gather statistics and all data possible, bearing upon the workings of co-operative business ventures by pharmacists, and report to the next annual meeting.

The Chairman: Before action is taken I would suggest that it would be good form to adopt a resolution that it be referred either to the general committee or the general session, so that we will not take up questions referred to any other body. Is it your pleasure to refer the previous resolutions to the general committee on resolutions or to the general session?

Mr. Avery: I move that the previous resolutions be referred to the general session.

The motion was seconded.

The Chairman: This motion refers to the resolutions previously adopted, and not to the resolution on co-operative buying.

Mr. Hallberg: Do I understand the motion, that it has been referred to the general session?

Mr. F. B. Hays: What are we talking about? Fire insurance?

The Chairman: That has not been acted upon. The motion is that the three resolutions already adopted be referred to the general session. They relate to parcels post, pure food and women pharmacists.

The Chairman stated the motion.

Mr. Mayo: Mr. Chairman, it would facilitate business if they were referred to the General Committee on Resolutions.

Mr. Avery accepted the amendment.

The Chairman: The motion as I understand it and as it has been changed and the change accepted by the second, is that these resolutions be referred to the General Committee on Resolutions.

Mr. Hallberg: Mr. Chairman, I would like to say simply that I do not know that this reference to this General Committee on Resolutions is practicable, because, in the first place, the committee was not appointed at the proper time; in the second place it was not appointed according to the resolution. It required that one member should represent each Section. I think I ought to read the names of the members that constitute this committee. They are not particularly representative: Hallberg, of Illinois; Caspari, of Missouri; Wm. S. Kaemmerer, of Ohio; Heuisler, of Maryland, and George A. Gorgas, of Pennsylvania. They may be representatives of the five Sections but I do not know what their status is this year.

Mr. Mayo: Well, we are making precedents and I think this is the best precedent to make.

Mr. Anderson: I think we can trust the committee inasmuch as Mr. Hallberg is Chairman.

The motion as amended carried.

Mr. Anderson: Mr. Chairman, I move that the recommendations as to insurance and buying be adopted.

The motion was seconded.

Mr. Mayo: Does that include the appointment of a committee to act on both suggestions?

Mr. Anderson: I understand it does.

The Chairman: As I understand it, that carries a recommendation to the incoming Chairman to appoint a committee for investigation and report to this Section next year.

Carried.

The Chairman: I would like to suggest that we proceed to the election of officers and take up the reading of papers afterwards.

The Secretary, Mr. Kniseley, took the chair at this point.

Mr. F. M. Apple arose to decline the position for which he was nominated in the Commercial Section, as he was nominated and installed in a similar office in the Section on Practical Pharmacy and Dispensing.

Mr. Mason: I understand he was nominated for associate chairman. I do not see that his serving in the same capacity in two sections at all conflicts. If he is a good man we cannot have too much of him.

Mr. Hynson: I think Mr. Apple would like to do a good deal of good work in some way, and would prefer to do it in the other Section; so I make a motion that his resignation be accepted.

Mr. Mayo nominated Mr. Claus, of St. Louis, but that gentleman declined.

Mr. Hynson: I would like to nominate a man from my own State, Mr. Wm. C. Powell.

The Chairman: Gentlemen, you have heard the nomination of Mr. Powell. Are there any other nominations?

On motion, the nominations were closed.

The Chairman stated the motion as to Mr. Apple's declination and Mr. Powell's nomination. It was carried.

Mr. Powell was declared nominated.

Mr. Hynson at this point again took charge of the meeting.

The Chairman: We will proceed to elect a chairman. Mr. H. D. Kniseley has been nominated for Chairman.

Mr. Anderson: I move that the present Chairman cast the affirmative vote of the Section for Mr. Kniseley.

The motion carried.

The Chairman: Gentleman, I take pleasure in casting the vote of the Section for Mr. H. D. Knisely as Chairman for the coming year.

We have in nomination for Secretary, Mr. C. E. Ward, of Denver. He is not present just now.

Mr. Ebert: Mr. Chairman, I think it is unfortunate for this Section that Mr. Ward is not present. I would like to place in nomination Mr. C. H. Avery, of Chicago. He is here, and he is an active man, and I am sure it will bring some good to this Section.

His nomination was seconded and the motion carried.

Mr. Hallberg: I will withdraw the name of Mr. Ward, and I move that the Secretary be instructed to cast the ballot for Charles H. Avery, of Chicago, for Secretary.

This motion was carried.

The Chairman cast the ballot of the Section for Mr. Avery, and he was declared elected Secretary.

Mr. Chairman: Now we have in nomination Mr. J. R. Francis, of Indianapolis; Mr. W. C. Powell, of Maryland; and Miss Charlotte E. Stimson, of Chicago, for associates of the Section. What is your pleasure?

Mr. Mayo moved that the Secretary cast one hallot for the three nominees. It carried.

The Secretary: I have cast the vote of the entire Section for Charlotte E. Stimson, J. R. Francis, and W. C. Powell for first, second and third associates of this Section.

The Chairman: We have one more paper on the program, which comes next: "Commercial Pharmacy—Its Better Side," by Frank E. Fisk, of Chicago.

COMMERCIAL PHARMACY—ITS BETTER SIDE.

BY FRANK E. FISK.

As an accompaniment to the evolution of the professions, with their tendency towards specialization, there develops, from time to time, the inclination to isolate the professional from the commercial side of pharmacy, as though their association were purely *accidental*, instead of quite *natural*, not to say always *necessary*, factors of the pharmacist's calling.

COMPATIBILITY.

Notwithstanding the apparent incongruity of the merchandise displayed at many modern pharmacies, as it impresses the casual observer, a careful investigation of conditions will often reveal the wisdom of the proprietor in catering to existing surroundings, present as well as prospective, probable as well as real, since it is the varied character of the *real needs* as well as the *imaginary wants* of the people that create and sustain the multiplicity of vocations.

AS MATTERS SHAPE THEMSELVES.

In the various walks of life, things are moulded to the surroundings. The calling of the "Knight of the Mortar and Pestle" being no exception to the rule, and while by the very nature of things he is bound to be an educator, and his place of business made a bureau of general information, himself being therefore a more or less important factor in the shaping process, his judgment should suggest the impropriety of attempting to develop a successful drug business in an aristocratic residence section of an American city with chewing tobacco as his *only* side-line ; nor would he look for a full measure of success to crown his efforts in a foundry district, with his stock in trade limited to high-class toilet requisites.

HIS DEPENDENCE UPON THE SICK.

While the loftiest phase of the pharmacist's calling is doubtless his copartnership with the physician in battling with the ills of animate creation, the thought of being solely dependent upon suffering humanity for a livelihood is certainly not the most pleasing to contemplate, and while self-preservation remains one of the unchallenged laws of nature, such a condition can scarcely be regarded as conducive to the well-being and happiness of the unfortunate sick.

THE ONLY ALTERNATIVE.

In view of the foregoing, and admitting for the sake of argument the wisdom of forever divorcing from American pharmacy all features of commercialism, the only possible road leading to the success of *Ethical Pharmacy,* as ordinarily interpreted, (anywhere), is the rather narrow lane of "legal restriction" limiting the number of pharmacies per capita, a condition for which we are not yet ready if indeed the United States will ever be. No less stringent measure could possibly succeed in elevating to a lofty plane the professional or isolated Ethical Standard of Pharmacy in America, or maintain such a standard when once attained.

EXISTING CONDITIONS.

Of the extremely varied prevailing conditions, few, even among pharmacists themselves, have anything like an intelligent conception.

From the ultra-ethical prescription pharmacy with its " heavenly " location in the upper regions of the modern physicians' office buildings of our great cities, to the "mortar marked" establishment of the vendor of paints, oils, glass, putty and patent medicines, located on *the* street of Podunk, every conceivable as well as many inconceivable phases of the calling known as "the drug business" may be seen. Here the conspicuous and well known regulator of the watchmaker serves to attract the attention of passers-by to the familiar, though less conspicuous, show bottles or globes, leading to a considerable array of patent medicines, a back-number and unused prescription case, and a number of show-cases with their miscellaneous contents, and finally, in an obscure corner a few remnants of largely empty shelf-ware ; while conspicuously displayed above the fixtures, in a rich frame, is a document conveying the intelligence that " Mr. Nostrum Vendor " is a registered pharmacist, though he may have never seen an institution of learning where the sciences, comprising a knowledge of pharmacy, are taught. Farther down the street another brazen sign, " Drug Store," or " So & So's Pharmacy " attracts the attention to an interior consisting largely of empty shelves, while the standing room is largely taken by a husky type of patrons, whose appearances indicate the character of this particular individual's business, viz., a dealer in ardents. And so on, *ad infinitum;* each business being moulded to its environment, and gauged by the fitness or unfitness of its builder, whilst chronicling along with the multiplicity of cases with their variable types, the history of the recent, as well as more remote, past, whose echo and shadow forecast with greater or less precision.

THE FUTURE.

This, if measured by the past, must unfold along lines of evolution, with results varying with the environment, but along a higher plane, the *real incompatibility*, resulting from the unprofessional traffic in *Patent Medicines*, with its consequent professional discord, giving way to the open-formula products of the pharmaceutical manufacturer, along with the more appropriate and carefully selected medical, surgical, sick-room and hospital necessities, coupled with toilet, home and tourist requisites, and other seasonable and appropriate merchandise, selected with due regard to environment, the income resulting therefrom tending to lessen his dependence upon the direct profits of sick-room traffic, thus rendering possible his full professional efforts with his co-laborer, the physician, in the interest of suffering humanity.

EDUCATION AND LEGISLATION THE KEY TO THE PROBLEM.

In future, as in the past, the elevating of the professional standard, with its consequent advantages accruing to all, will doubtless emanate from the enactment of just, wise and proficient laws by the several States and nations, in harmony with such equally just and proficient educational requirements by the colleges as will mean the exclusion of ignorant and otherwise incompetent persons, whilst tending to encourage and improve those already engaged in the noble and responsible calling of pharmacist.

Chicago, Ill., August 10, 1906.

On motion the paper was received and referred to the Committee on Publication.

The Chairman: I do not believe many of you want to stay much longer. Mr. Kaemmerer says he wants his paper read by title. There are quite a number of other papers to be read by title, and if it is your pleasure they will be taken that way.

Mr. Apple moved that the papers be read by title and referred to the Publication Committee, and the motion carried.

The Chairman: They are as follows: Creating Favorable Impressions, by Mr. Kaemmerer; How to Economize the Time of Expensive Assistants, by Andrew J. Eckstein; Relative to Quantity of Qualified Undergraduate and Untrained Help Required, by Chas. R. Sherman, of Omaha; True Success in Pharmacy, by George E. Bartells; Machine-Made vs. Hand-Made Elastic Capsules, by Anthony M. Hance; Stock and Stock Keeping, Drugs and Sundries, by Miers Busch; Commercial Possibilities of Local Branches of the A. Ph. A., by M. I. Wilbert; The Identification of Chemicals, by Geo. M. Beringer; The Preservation of Chemicals, by Geo. M. Beringer; The Pharmacist's Birthright, by Louis Schulze.

I have also a paper written by a gentleman very familiar with buying, who has had a large experience. Although not a member of the Association it can be received and referred to the Publication Committee with the request that it be published. It is a valuable communication. I believe he can be induced to become a member, and if you will allow me to advise you I would suggest that it be referred. The title of the paper is, Buying: How, When and What to Buy, by Stanley B. Simpson.

On motion of members it was referred to the Publication Committee with the special request that it be published.

The Chairman: Gentlemen, Mr. Powell is here from the eastern shore of Maryland. I secured his election as associate of this body. We should like to hear from him.

Mr. Powell: Gentlemen, I thank you. I will try and do the best work I can, and as Mr. Dunning, another man from Maryland, said in another section, I will commence right away to work, and if there is anything I want you to do I will write you and expect you to respond promptly.

Mr. Theo. E. Otto: Mr. Chairman, I did not vote for him on your recommendation, but on account of the good work he did on the boards of pharmacy.

The Chairman: Gentlemen, if there is no further business I would like to appoint Mr. Benfield and Mr. Kaemmerer as a committee to escort the newly-elected officers to their places. If you can find Mr. Kniseley we will install him.

Mr. Kniseley was escorted to the platform.

Chairman Hynson: Mr. Kniseley, I am very glad to have the honor of turning over to you this Section, believing in you we will find some one who will do something for commercial pharmacy.

Mr. Kniseley: Gentlemen, I thank you sincerely for the honor, and I promise you I will use my best endeavor to bring about the very best condition of our work that pertains to this Section, and with the hearty co-operation of each of the members of this association and the able assistance I expect from my associates I trust we will be able to bring you an interesting program next year. I shall be disappointed if we fail to bring an interesting program and something that will commend itself to the Association. Undoubtedly one of the prominent questions to many of us is how to advance our business and how to make the most of the opportunities that confront us. I thank you.

Mr. Avery, the newly-elected Secretary, was escorted to the platform and introduced. He said:

Gentlemen, I sincerely thank you for the honor you have conferred upon me, but I assure you I will not accept the office merely for the honor; I accept it because of the deep interest I have in the welfare of the retail pharmacist, and if in the capacity of secretary of this branch of the Association I may be useful to the retail pharmacists, who so seriously need a helping hand, I shall be pleased and thankful for the opportunity you have given me.

Chairman Kniseley: The associates will now be escorted to the front.

Mr. Powell was the only associate present, and when introduced said: Gentlemen, I believe Mr. Hynson called forth some remark from me that should have been made now, so I will not say anything else. I thank you very much for the honor.

Chairman Kniseley: There is no further business before the Section. What is your pleasure?

On motion the Section adjourned to meet next year at the time and place that may be selected for the next annual meeting of the American Pharmaceutical Association.

Papers read by title.

CREATING A FAVORABLE IMPRESSION.

BY WM. F. KAEMMERER.

Herewith are presented copies of a series of typewritten letters which we have regularly, every month, sent to a select number of physicians. They were not intended to make sales to the physician, but merely to cause him to think and speak well of our store, and induce him to write prescriptions.

It is a comparatively inexpensive method of advertising the prescription department which can be made use of by any pharmacist. It presents an unlimited field.

To have a score or more physicians recommending your store to their patients, and these in turn recommending your store to relatives and friends goes far towards building up a reputation.

The letters must not be too long, and, like all other advertising, you must be able to substantiate the statements made in your letters.

The first letter was intended, more than anything else, to call attention to the fact that we kept our store open at all hours. It is not an original letter. I simply made use of it because it seemed good. The other letters we compiled ourselves because it was found that we had plenty of material and they would answer our purpose much better than copied letters.

In our second letter we called attention to the fact that we were in position to supply oxygen gas, antitoxin and a few other specialties. Along with this letter we enclosed a printed circular supplied by the manufacturers of oxygen gas.

In the third letter we told about suppositories, and enclosed one for inspection.

In our fourth letter we mentioned the care we exercised in the preparation of infusion of digitalis.

The fifth letter was one on Basham's Mixture. That part of the letter describing the medical properties of Basham's Mixture was copied from one of the latest dispensatories.

Our sixth letter tells about our new prescription department, and calls particular attention to the matter of cleanliness.

Letters number seven and eight, respectively, call attention to accuracy and to the purity of materials.

The following are copies of the letters:

LETTER NO. 1.

Dear Doctor: The beginning of the New Year is a good time to express to you our appreciation of the favors you have shown us during the past twelve months.

We feel that to the commendation of the medical profession should be largely credited the public confidence extended to our prescription department.

We find a large number of your prescriptions on file, and wish to thank you for your part in making possible the splendid prescription business we have done the past year.

It is gratifying to us to note how our efforts in giving the best service possible have been appreciated by both the physicians and their patients, and we wish to say that we shall still spare no pains to conduct our prescription department with the most modern scientific methods.

We shall continue to keep our place of business open both day and night during 1906, and will be prepared to serve you or your patients at any hour, just as we have done the past six years, and can assure you that your own as well as your patients' interests will be conserved here in the future as in the past.

Hoping that the year of 1906 will, from every point of view, prove a most highly successful one for you, we are,

Yours very respectfully, ——— ———.

LETTER NO. 2.

Dear Doctor: Do you ever have occasion to use oxygen? If so, we are in position to supply you with a pure and reliable article at any hour of the day or night.

Heretofore it has been impossible to obtain oxygen gas of uniform strength and purity, causing the reputation of this valuable therapeutic agent to suffer in consequence. We, therefore, consider ourselves fortunate in having secured the Columbus agency for Blank's pure oxygen gas which is guaranteed to be always of uniform strength and highest purity obtainable. For further information we would kindly direct you to the enclosed circular, or call on us.

We also carry in stock the principal brands of antitoxin, Blank's tincture of digitalis, and Blank's fluidextract of ergot.

Trusting that we may be of service to you in supplying any of the above articles to your patients, we remain,

Yours very respectfully, ——— ———.

LETTER NO. 3.

Dear Doctor: We enclose herewith a suppository for your inspection in order that you may judge of the high class of work we are doing.

The making of a satisfactory suppository with cacao butter as a base is a difficult art and is the rock upon which many pharmacists stumble and fall.

One may very often judge of a pharmacist's skill in compounding prescriptions by the kind of suppository he is capable of turning out.

The enclosed suppository is prepared of pure cacao butter by fusion and contains two grains of tannic acid, and a half grain of extract of stramonium leaves. We have chosen this combination because it is a very difficult one to prepare.

Cut the suppository in two and observe how evenly the ingredients are distributed.

Let us prepare your prescriptions for suppositories and bougies.

Very truly yours, —— ——.

P. S. We are sole agents for Blank's pure oxygen gas.

LETTER NO. 4.

Dear Doctor: We desire to call your attention to one very important article in the United States Pharmacopœia, and to the special care we exercise in its preparation, namely, infusion of digitalis. We never carry any of it in stock ready made, nor do we prepare it by diluting the fluidextract of digitalis with water. Every ounce of infusion of digitalis dispensed by us is freshly made and prepared from carefully selected leaves.

The digitalis we use is grown at Ampthill, Bedfordshire, England, by Geo. Allen & Co., and imported in one-pound sealed tins.

It is of very great importance what kind of an infusion of digitalis your patient is going to get. Often it is a matter of life and death, depending on whether he gets an infusion prepared fresh from the leaves or one which has been prepared by diluting the fluidextract.

Should he be so unfortunate as to receive an infusion prepared by the latter method you may look for effects almost opposite of what you are expecting.

Avoid all uncertainty by directing your prescriptions for infusion of digitalis to our store.

Very respectfully yours, —— ——.

LETTER NO. 5.

Dear Doctor: We desire to call your attention to another valuable U. S. P. article which requires care both in its preparation and in the selection of materials entering into its composition. We have reference to Basham's mixture (liquor ferri et ammonii acetatis).

Following is its composition: Tincture of ferric chloride 40 Cc.; diluted acetic acid 60 Cc.; solution of ammonium acetate 500 Cc.; aromatic elixir 120 Cc.: glycerin, 120 Cc.; water, a sufficient quantity to make 1000 Cc.

This does not look difficult to prepare, and yet, how often have some of your patients received an unsatisfactory Basham's mixture? A satisfactory Basham's mixture can easily be made, provided proper care is exercised in following the U. S. P. directions and if only pure materials are used.

These two cardinal points we wish to emphasize—purety of materials and carefulness

In preparing solution of ammonium acetate we use only the translucent portions of ammonium carbonate (we use Squibb's) and pure acetic acid (also Squibb's). Furthermore every ounce of Basham's mixture we dispense is prepared fresh and does not reach the patient in a stale and flat condition.

Liquor ferri et ammonii acetatis is an astringent chalybeate largely employed in the treatment of chronic nephritis. It produces diuresis, decreases albuminuria, and is considered the best preparation of iron to employ for combating the anaemia of Bright's disease.

The new U. S. P. formula is a decided improvement over that of 1890, being twice as strong.

We shall always dispense the new preparation unless explicitly directed to dispense the weaker one.

The dose is from 2 to 8 fluidrachms (8 to 30 Cc.).

Very truly yours, ——— ———.

LETTER NO. 6.

Dear Doctor: In the compounding of physicians' prescriptions we consider cleanliness of just as much importance as purity of materials and carefulness. The dispenser who does his compounding amid disorderly and unclean surroundings is not apt to be particular or careful in his work. He also loses the advantage of working with pure materials.

Realizing, as we do, the importance of cleanliness, we have, at considerable expense, installed what has aptly been called the Twentieth Century Innovation Prescription Department. We have space here to mention only a few of its advantages.

It is practically shut off from the rest of the store, which insures privacy. The dispensers, instead of working in some dark back room or behind a screen, work behind a large plate of clear glass in full view of all who care to see, thus virtually compelling cleanliness and carefulness. We are not ashamed of our work and see no necessity for secrecy.

The proverbial drug-store towel, we have also largely done away with, using in its stead, plain absorbent gauze, which we buy in hundred yard rolls, from which as needed, pieces are cut off, and when once used are thrown away.

While it is customary in preparing prescriptions intended to be used in the eye, to exercise special care as regards accuracy, purity of materials, and cleanliness, we would emphasize the fact that practically all of our work is done on these same lines.

We hereby extend to you a most cordial invitation to inspect our prescription department whenever convenient.

Faithfully yours, ——— ———.

LETTER NO. 7.

Dear Doctor: A most important factor in the proper compounding of prescriptions is accuracy—accuracy in weighing and measuring the several ingredients prescribed. Just as we appreciate the importance of "purity of materials" and "cleanliness," so do we also appreciate the importance of accuracy. Our prescription department is equipped with the best and latest appliances necessary for doing the most accurate work. We have complete sets of both metric and apothecaries weights and measures and employ only qualified assistants who know how to use them.

Two of our prescription scales are sensitive to one milligram or $\frac{1}{64}$ grain. While ¼ pound may be weighed upon them without injury, we make it a rule never to exceed one drachm. Anything over this amount we weigh on the larger scale which is sensitive to ½ grain. I believe we have the most accurate and most sensitive prescription scales in the city. They are torsion balances, have no knife edges and work without friction.

We allow no one to work in our prescription department who is not thoroughly qualified both by special training and long experience. Inexperienced students, young girls or young boys are not permitted to experiment with your prescription. Our "everything in sight" prescription department precludes any possibility of this kind. Our assistants receive the highest salary of any in the city.

You are safe in sending your prescriptions to our store.

Very truly yours, ——— ———.

LETTER NO. 8.

Dear Doctor: The quality of materials supplied in the compounding of your prescriptions plays a most important part in the practice of your profession. Very often it decides the success or failure of a case.

We fully appreciate this fact and accordingly use only the best material obtainable.

We beg leave to call attention to a few articles we are prepared to supply, some of which may interest you: Natural oil of wintergreen, salicylic acid and salicylate of soda from oil of wintergreen, Squibb's ether, chloroform, Hoffman's anodyne, sulphate of zinc, sugar of lead, biborate of soda, subnitrate of bismuth, fluidextract of ergot, fluidextract of digitalis, tincture of digitalis, potassium bromide, ammonium bromide, sodium bromide, and ammonium carbonate, Merck's pure oil of turpentine, beechwood creosote; guaiacol, thymol, menthol, resorcinol, salol, oleoresin of malefern, thiocol, veronal, ichthyol, subgallate of bismuth, phosphate of soda, and calcium glycerophosphate, antitoxin, pure oxygen gas, freshly prepared infusion of digitalis and Basham's mixture, compound vinous infusion of digitalis, John's elixirs and Uri's specific medicines.

Kindly bear us in mind when prescribing any of the above mentioned articles or others of which you desire the best quality.

Very truly yours, ——— ———.

HOW TO ECONOMIZE THE TIME OF EXPENSIVE ASSISTANTS.

BY ANDREW J. ECKSTEIN.

At the outset, let me advance an opinion, one, by the way, that has to do with the very marrow of this subject. That opinion is this: No other business in the world has more of the professional mixed with it than the business of the pharmacist. It is a profession unlike other professions. To illustrate, let me draw upon you for a few ideas of your own; let me suggest what you already know, whether that knowledge be active or latent.

The professional man develops a certain side of his nature. By the very reason of his analytical training, he becomes not the professional money-getter, but the thinker. Witness the instances where inventors have been robbed of their ideas, and, after being robbed, have been laughed at in court because they know too little of business to protect their rights.

The professional training does not exactly fit one for a clear conception of the ledger and the cash book. This, I believe, makes it a little more difficult for many pharmacists who find that they are being "locoed," as the western term would put it, out of what is justly theirs. This is what I would call an innate handicap. It is the mixing of technical knowledge with business, and business has come to be so distinctly separate from every thing else that there is really no use saying that the pharmaceutical business differs in any manner from any other kind of commercial endeavor.

I state my belief that these conditions are imposed in order to deliver a lucid opinion regarding a topic that, like the dropping of the water that wears away the stone, must in time put a crimp into the bank account of the ambitious druggist.

In time, as we all know, the druggist begins to break away from his purely professional career. Rents, stock, fixtures, pay-roll, everything helps him to forget that he was tutored in a prosessional atmosphere. But the assistants, mostly fresh from a college, or filled with ideas not compatible with strict business methods, are not given to doing any more than is forced upon them. To utilize their time as one would the time of an office boy, may be a trifle offensive to them. To impress upon them the necessity of filling in their time, may be unnerving to them. Once an employee begins to feel that unless he keeps up to a certain standard he will lose his position, he may become useless through apprehension. But human nature and business are two qualities that we must not lose sight of.

We cannot expect our assistants to be business-getters. Only by the merest chance would one be proficient in advertising notions. Besides, our own initiaive is a great deal better both for the business and for ourselves. We must not blame any assistant for a condition that he is not responsible for. We should not even go so far as to imagine that it is a wise plan to take up a valuable man's time with a cheap man's work. We are buying the high-priced assistant's time. We are paying for it. The man is willing to work, but we must keep him busy. Bear in mind, please, that I am not dealing with lazy assistants. My cure for them would be to give them a long vacation without the sustaining assistance of the pay-roll. I am talking about the valuable man who is waiting for orders.

If we could get all the men we wished at any price we wished, and each would possess generalship, we would soon have a Utopian business. But we have to deal with men as they are, and do what we can to make them better.

The best use any employee can be put to, is that utility that comes of education through practical application. The busy store develops the best clerks, or culls out the poor ones. And the busy man develops the best clerks. We cannot dodge perfection or an approach to it, in our employees. We want them as proficient as we can get them. We are willing to pay the price, and having paid it, we want *better service.*

The problem of keeping our clerks busy soon resolves itself into the possible danger of keeping them too busy. We might overwork even the most willing employees. What we want is a mean—a happy medium that is midway between the two extremes.

The pharmacist is brought face to face with conditions that do not affect the usually prosperous merchant or manufacturer. There everything is done by rote. The books are kept that way, the stenographers take dictation that way. Goods are handled in accordance with regular hours and steady work. Checking is done by schedule. But in pharmacy, where the work of compounding or clerking is dependent on patronage, we have either to increase our business, make proprietary remedies, or tolerate periods of enforced idleness in our store.

To deal with a business problem is not a matter calling for any cut-and-dried rulé. Running a drug store is not the same as making a sponge cake, where the same recipe is good the same at one time as at another. There are, fortunately or unfortunately as we look at it, no immutable laws governing the conduct of a drug business. Localities more than ourselves, may have to do with the idleness of our clerks. The same employee in a main street store might not present any problem at all to us. Hence, let us be fair enough, liberal enough to study all conditions.

I contend that human nature often has a great deal to do with the problem. There might be the inclination in an employee to be analytical. Maybe he is a better laboratory man than a drug clerk, but an excellent man for us for all that. Shall we employ his talent, or shall we proceed to believe he is an expense, as fixed and relentless as rent or taxes?

I should like to be able to give a formula for keeping our idle clerks busy. I should like to show all of us how we can make each employee earn fifty or seventy-five dollars more each week, but I am unable to do that. Every time I try to figure it out for myself I arrive at the same conclusion: the drug business is a strange combination of the business and professional life, and it is apt to show its singular construction to a more pronounced degree in the assistant than it is in the employer.

P. D. Armour, the late head of the big Chicago packing house, was known far and wide as a clever buyer of brains. A hard worker himself, he recognized merit, and he found the right man for each place. Gruff, and not constructed in a manner that naturally instilled his hearers with tranquility, he still possessed the knowledge thas makes some men capable managers. There are always the right men for everything, but whether we find them or not is the question. There are ways of handling men, and those ways crop out as we study conditions.

I am satisfied that the solution of the problem is a business one, and that the man who succeeds in solving it is the fellow who forgets, for the nonce, his professional calling, and gauges his actions in a way in accordance with the ledger—the while bearing in mind that knowledge is always the greatest power; that it is what makes man use mechanical devices rather than brute strength.

RELATIVE TO QUANTITY OF QUALIFIED UNDERGRADUATE AND UNTRAINED HELP REQUIRED.

BY CHAS. R. SHERMAN, OMAHA, NEB.

One of the saddest crumbs of philosophical satisfaction is that anything —everything that we—any or all of us, are now doing can and probably will be done by some one else in the very near future as well or better than we ourselves are now doing it.

The engineer issues orders to-day to his fireman who is content to perform work of a hard and menial character because to-morrow he will, he hopes, have his hand upon the lever and take the place of his chief.

The "Mascot" boy at the base-ball game as he arranges the bats on the ground and in turn hands the right one to each respective slugger, of course cherishes the hope that some day he will be a star player, the idol of the fens.

The "Club Reporter" of to-day may and rightfully should be the wise editor of a decade or two hence.

On the other hand, the engineer, the base-ball manager, the editor or captain of any other art, science or industry, must constantly look to his array of assistants, senior and junior, and concern himself as to their quality and quantity for there will surely be places to be filled in the higher ranks and there must needs be more than one standard bearer in a long day's battle.

No matter how much training a pharmacist may have in a college or what age he or she may be, there must needs be a period of induction into the "business" of a drug-store. It is during the period of induction that a like or dislike for the business may be formed and in proportion to the skill and resourcefulness of the inductor is the helpfulness of the apprentice or student developed. In any drug-store large or small, there are multitudinous duties, many of which can be easily and safely performed by a person but slightly skilled in pharmacy fully as well as by a "past master" in the art. How wasteful for a full-fledged pharmacist to spend his time in making seidlitz powders. Of course, a competent person should direct the selection of the material and its mixing and sifting, here also a few words may be said to the beginner as to the proper quality of the ingredients, their therapeutic properties and the theory of mixing—the student being required to memorize the grainage of each respective ingredient. This being done, the apprentice is now a 32nd degree Seidlitz Powder Pharmacist.

Having been invested with his newly earned honors, he may be taught the points of bottling castor-oil, viz., to have the bottles clean and free from moisture and not filled so full as to prevent good corking, and its official name, etc.

Where a large number of special preparations are made or bottled by the pharmacist, he soon learns to avail himself of young women and in the opinion of the writer they are in a measure the hope of pharmacy of the future. Under the eye of experienced pharmacists, spirit of camphor, tincture arnica, carbolic acid, lime water, alcohol, sweet spirit of nitre, etc., are neatly put up in 10-cent, 15-cent, and 25-cent or higher priced packages, as the case may be, all plainly marked as to price and quality and ready to be handed out on the instant.

Of course, a prescription clerk should not, if he has any other more important work to keep him busy, be required or allowed to wash bottles, mortars or graduates, open boxes or do any work of the sort that could be properly and much more economically performed by the apprentice or porter. It should be an offence requiring explanation to the manager for a trained clerk to be found doing any work which could be as well delegated to an untrained one.

By this rule in the prescription room, a junior assistant must fill as occasion may require, several hundred or thousand capsules of quinine, 2 gr., 3 gr., 4 gr., and 5 gr. 5-grain capsules of salol, acetanilid, salicylate of soda, phenacetin, phenacetin and salol, of each 2½ grains, aspirin, etc., extending to all the things that experience has shown to be in active demand, thus facilitating rapid prescription work. Of course, more experienced help must supervise this work closely, and see that the proper grainage is being used, but my experience is that if the important point in each piece of work is properly emphasized a prompt response to admonition may be expected in the way of carefully-done work by the average beginner, either young man or woman.

As to the quantity or proportion of undergraduate or untrained help (making a distinction between the two) that can properly and profitably be employed, it would seem no *absolute rule* can be laid down as indeed there can hardly be about many other points in conducting a business.

In many stores one person is the proprietor, pharmacist, soda water dispenser, stamp-seller, director of the laboratory, etc. In another it is the same thing, with one assistant and possibly an errand boy for a few hours each day. In either of these stores, how foolish to talk of loss of time or dignity incurred by having a pharmacist wait upon the soda fountain or sell putty and kindred merchandise.

In the opinion of the writer, the great success which some of the large stores in large cities and thickly-settled communities have attained, has been due largely to the fact that help (labor) has been wisely utilized.

This does not mean at all that cheap help has done all the work, on the contrary, each respective grade will be well paid for the duties performed, but it should mean that the men and women best fitted for this work are kept constantly employed in compounding prescriptions and manufacturing galenical and other preparations—that the counter trade is waited upon by people to whom this work is not distasteful, and who are furthermore in touch with the wants of the customers of this store and the community in general as well.

If the store is large enough there are young women for cashiers and to wait upon the perfume and toilet-articles counter. The porter washes the windows, scrubs the floor each morning, handles the ice for the soda fountain, in fact is a very useful and busy man every minute in the day. Boys with bicycles will do the delivering of packages, taking the street-car if it is a basket of malt or mineral water. The boys when not making deliveries will wash prescription bottles and utensils from the prescription counter, and here is where the process of induction commences for the boy.

The cashier will sell the stamps as pleasantly as she does soda tickets or take the money for a high-priced prescription, and all inquirers will, without a second's loss of time, be directed to her. She will also point the way to the directory and telephone, and do it all cheerfully or not be allowed to do it at all.

If a large proprietary business is done, these goods should be neatly wrapped in advance, and this, of course, can as well be done by unskilled help.

In a busy prescription room one of the assistants who is the weakest, or who possibly has not been "tried out" may first be utilized if a fair penman for label-writing, thereby saving the time of a higher-priced prescriptionist for work requiring greater skill and care. It is, of course, understood that the written label would in all cases be verified by rechecking by the compounder.

It is a most costly fault in a skilled pharmacist not to know how and be willing to avail himself of the services of his untrained or apprentice help, for while it may to-day take fifteen minutes of the trained man's time to show the helper how to do something he could have done himself in ten, yet to-morrow, and many times in the future he may be glad to avail himself of his newly fledged assistant to perform this same duty when he, the trained man, may not have one moment to devote to it.

TRUE SUCCESS IN PHARMACY.

BY GEORGE C. BARTELLS.

I am asked to write something of interest to the members of the American Pharmaceutical Association. They are such a diversified lot that it is not an easy task. The very fellows whom I might interest are not generally in attendance at our meetings. I fear what a village or country druggist might have to say would be dull to our learned professors, doctors, city proprietors, and editors of the pharmaceutical journals.

It has been a custom and, I might say, a habit, lately, of many members to bring to our association meetings, our grievances, "our sore toes." So many have gotten into this habit of grumbling and looking for dark spots on the "sun of life" that they really miss its brightness and glory. Why, I could write a whole chapter of "frog croaks" myself, but what help would they be to any one, even if I could get listeners? What is there that is uplifting or helpful in them? I have gone to our State and other meetings to get inspiration, and got instead a dose of the "dumps." We had, at one time, a minister in our little church who was constantly in the "dumps," and you always felt mean and low or indignant whenever you went to his church. He kept it up until he had only empty benches and a few "stickers" to whom he might preach.

Are there difficulties in the drug business? Surely there are just as there are in all of life's vocations and will be, as long as we are *men*.

I found business dull, last month; customers few, and those that came, many were only five-cent ones, so I went into my gooseberry patch and, in spite of the thorns and briars, made it yield up twenty gallons of berries. I enjoyed the fight, although my hands felt pretty sore for several days. You ask, what have gooseberry briars to do with the drug business? You may answer that, as it is your question. I will, however, say that one of the sharp thorns in the rural drug business is the healthfulness of the community, and yet I thank God for the thorn, for health. Sickness and death are sources of loss and damage, and not matters of profit. If our customers do not have to spend so much for medicine, they have more money for luxuries. Another thorn is the physician who furnishes his own medicines. Now do you not, from the bottom of your heart, pity the poor doctor who has to resort to this pitiable business of selling a few pills and ointments by which to eke out an existence. One of our physicians is adding little by little to his stock of drugs until he calls it the "Little Drug Store." Do you think he feels proud of this necessity? We druggists talk of strong competition; I am glad I am not a doctor in these healthy times, although I do have to sell chewing gum to help pay my expenses.

Greed for the almighty dollar has gotten possession of some of us druggists, and we only look on life as a means whereby we may accumulate much earthly goods, forgetting that the best "life does not consist in the abundance of the thing possessed," but is made up of being helpful to our families, neighbors; to strangers and, especially, to the needy,—in fact, being a humble servant, a good Samaritan. In such is found all there is that makes life worth living. I have tried to curb my desire to be rich, and, while I do not have to try very hard, these times, to keep poor, I do want to leave behind me a good name, one that will stand for honesty, for industry and helpfulness; besides this, I want to be remembered as having lived a cheerful and a thankful life.

Camp Point, Ill., July, 1906.

MACHINE-MADE VS. HAND-MADE SOLUBLE ELASTIC CAPSULES.

BY ANTHONY M. HANCE.

Although the gelatin capsule has been known to pharmacy almost seventy-five years, it seems strange that the real progress in the development of this art should have been comparatively recent; and it is especially interesting to note that this great advance can be accredited to American enterprise and invention. The early manufacturers preferred apparently to confine their efforts to the production of a hard, spherical capsule, or "perle," generally not much larger than a 5-grain pill.

In the manufacture of these old-fashioned goods the encapsulating material was a combination of gelatin, acacia and sugar; but with the field then opening much broader for the administration of nauseous drugs in larger doses, it became necessary to change the physical condition of the capsules from hard to soft. This was finally accomplished by substituting glycerin for acacia and sugar, which combination also most fortunately helped to impart the additional property of elasticity; hence it was that the impracticability of the hard capsule or "perle" for larger sizes became evident with the desire to administer nauseous liquids, such as castor, cod-liver and santal oils, creosote, apiol, copaiba, eucalyptol, and bitter drugs such as quinine, cascara sagrada, Warburg's tincture, either in combinations or in larger doses.

Then was begun the manufacture of "soft" or "elastic" capsules; but these were hand-made in every particular, that is: making the gelatin shell by dipping metallic moulds into the prepared gelatin by hand; allowing the gelatin to cool; pulling off the resultant shell by hand; trimming off the irregular open end by hand; filling by hand; and then sealing by hand.

The manufacture of capsules this way was not only a laborious and expensive operation, but positive uniformity of size and appearance could not be obtained, and the sealing of the end not always being perfectly done, it frequently happened that the leakage of the contents of one capsule would spoil all the others in a box by their becoming soiled or contaminated on the outside with the liquid, the taste of which they were intended to cover.

It was about ten years ago that a more rapid method of making hand-made capsules occurred to the writer, and while they could be turned out more economically than heretofore by the introduction of a mechanical process in one part of the operation, and the plan was an improvement over other methods of manufacture, he was not satisfied with the product, notwithstanding the fact that there was a great demand for certain combinations. Then, a little later on, he began experimenting with a machine that had been constructed for the purpose of making capsules, although there was no provision for the manufacture of the one kind of capsule that was then in greatest demand, viz., compound salol.

Without its being possible to manufacture compound salol capsules by machinery, for which there was then the much greater demand, it hardly seemed good policy to incur the expense of putting in machinery for the production of other capsules when this particular combination would still have to be made by hand. If the one in greatest demand had to be made by hand, why not make all by hand? What was the use of making some by machinery unless all kinds could be made this new way?

However, after many trials and experiments, a method was devised by which the tablet of pepsin could be mechanically introduced into the machine-made capsule, which invention at once enabled us to make all kinds of capsules uniformly by machinery and discontinue the hand-made capsule; since which time, in the writer's opinion, the hand-made capsule has practically been rendered obsolete.

While to the laity the difference between hand- and machine made capsules is not especially noticeable, it is extremely radical to the expert.

The hand-made capsule almost invariably contains an air-space; this of itself in some cases is sufficient to cause the contents to become oxidized and rancid; producing characteristic gastric disturbances. The machine-made capsule, if properly manufactured, contains no air-space at all, at the same time retaining in a more marked degree the elasticity and non-collapsability desired by the profession. These characteristics are not possessed by hand-made capsules, which lose their shape and frequently become hard, and while it does not follow that such capsules are not entirely satisfactory, from a therapeutic standpoint, yet from *a commercial* standpoint they are most decidedly not in accord with so-called twentieth century methods.

The question of "solubility" very naturally enters at this point; gelatin as is well known, is not "soluble," strictly speaking, in cold, aqueous solutions. It is in reality only affected by the absorption of such solutions, whereby the gelatin mass becomes softened. This point should not be lost sight of in testing gelatin capsules for "solubility;" and it is important that the solution in which the tests are made should be of a uniform temperature of 40° C.

The machine-made capsule in its construction from a mechanical point of view is really two sheets of gelatin welded together; this peculiar construction enables the capsule to be more readily opened when brought in contact with the gastric fluids. If we take two capsules, the hand-made with the air-space and the machine-made without the air-space, and drop them simultaneously into a vessel containing water that has been previously heated to 40° C., we find that the machine-made capsule will sink at once, while the hand-made capsule will be submerged only about two-thirds its length, and will require some time to soften before disintegration. The machine-made capsule being at the bottom of the vessel, its entire surface thus comes in contact with the testing liquid; whereas in the hand-made capsule there is only one small portion that is not a part of the whole, namely, where the capsule is sealed. The machine-made capsule being of two distinct parts welded together, will open along the whole seam, where it is brought into contact with the aqueous solution; while the hand-made capsule may not open at all.

From a mechanical standpoint the machine-made capsule is far handsomer in appearance, not losing its shape and general characteristics when properly made and stored under ordinary conditions of heat and atmosphere; and it almost goes without saying that the manipulation of such a difficult substance as gelatin requires great skill on the part of the operator; and for this particular class of operations most accurately and powerfully constructed machinery of special design must be used.

Nothing is more in keeping with modern pharmaceutical progress than the handling of a line of goods of this character, for when people have once begun to use them and find that so many nauseous, bitter, acrid, pungent or other bad-tasting drugs can be disguised by plain and colored or flavored gelatin so that a standard dose can be taken uniformly; and that the medicine thus encapsulated is as easily swallowed as an oyster, they will always find the money to pay for the advanced cost of marketing such goods, especially in this country. Even the larger sizes, up to 5 Gm., contain a dose of medicine that can be administered in this form which practically could not be given in any other way, except plain or emulsified. Another great advantage in taking medicines in capsule form is that there is no soiling of spoons or glasses as when oily drugs are taken direct. But people are not going back to inconvenient ways of taking disagreeable medicines any more than they are going to give up other improvements that come with civilization and progress.

The property of the gelatin mass to be colored or to be flavored, the therapeutic advantages in the administration of certain drugs in tablet form in connection with medicinal oils, etc., etc., all open up a wide field for the use of machine-made elastic capsules, and notwithstanding the many improvements that have been made the business in itself is "still in its teens," in the writer's opinion, the general public not as yet having discovered the advantages in taking medicines in this form. This will come in time, however, and the writer already sees indications of it in the increased sales of machine-made capsules of cod-liver oil, and, indeed more especially, of castor oil.

Experience and observation have shown that it is well to bear in mind the following in connection with the handling of soluble elastic capsules: While, in the course of time, a deepening of the color of the gelatin is sure to occur in all goods of this character, and although light may also apparently darken the contents, it must not be assumed that such color changes affect the contents or indicate any deterioration in therapeutic efficiency. It is also most important that these capsules should be protected from dampness and high temperature. Dampness will cause them to absorb moisture, which in turn may induce mouldiness and leaking. If a box of capsules reaches this condition it is impossible to redress them. High temperature will ruin any capsule made that is worthy of the title, "Soluble Elastic," so in order to keep machine-made soluble elastic capsules in the best possible condition, see that they are not stored in a temperature over 30° C., lower if possible, and always in a clean, dry and well-ventilated place.

So in view of the foregoing, the writer will recapitulate briefly the following nine points of advantage possessed by machine-made and -filled gelatin capsules over the different varieties of hand-made and -filled gelatin capsules, as found to-day in the open markets.

Being manufactured by machinery they are made of (1) uniform shapes and sizes, and therefore are more (2) sightly and more (3) salable. While rigid enough to retain the shape in which they are made, whether spherical or oval, they are more (4) soluble.* By skillful manipulation, especially in the exclusion of air, they are more (5) permanent, while a new and most important property is imparted, viz.: (6) elasticity, by their (7) ability to carry one or more tablets that can be mechanically introduced. The (8) free advertising for the retail druggists who handle such up-to-date goods, by (*a*) physicians who appreciate the scientific side and by (*b*) the public who see the practical side. Finally (9) like all machine-made goods they can be marketed for less money than hand-made goods.

Philadelphia, August 6th, 1906.

STOCK AND STOCK KEEPING OF DRUGGISTS' SUNDRIES.

BY MIERS BUSCH.

The subject has divided itself, in my mind, into two parts, buying and preservation, display and sale. I have not considered semi-department stores in business centres, but pharmacies in residence districts, with family trade.

The first question a man opening a new store is called upon to decide, is, how to divide his capital in placing his stock order.

Unless a large venture, he often determines to put the smallest amount possible into sundries, feeling that he must have certain drugs and patent medicines, and saying in regard to sundries, "he will see what the local requirements are, and buy as his trade develops."

Too often under such circumstances, in order to obtain "bulk" for display, he buys low-priced goods, and his first customers are more or less impressed with the idea that he intends to continue on that basis.

A retailer should buy the highest-priced goods his trade demands, and some a little bit better.

He should constantly endeavor to improve the quality of his stock, and not try to compete with department stores offering medium qualities at close prices.

So far as the druggist is concerned, the customer expects quality in sundries with the same confidence that he extends to the prescription department.

A fundamental rule laid down by a noted engineer engaged on trolley roads in large cities was "traffic follows the cars." In other words, the more facilities you offer, the more will the public take advantage of them.

I feel the same is true of merchandise: if you do not buy it, you cannot sell it, and any amount of careful and intelligent observation may be devoted to noting what classes of goods customers are buying, and then as to how and where to increase stock and assortment.

Above all do not go to the other extreme and buy classes of goods that do not belong to sundries stocks. Such purchases are seldom extensive enough to command trade, and certainly lock up capital that might be much more profitably invested.

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* As understood in the application of this term to gelatin.

This does not mean that the local "side-lines" such as confectionery, photographic supplies and books, should be ignored; they vary greatly and generally bring good returns.

A record of purchases in leading lines should be carefully maintained, so as to re-order with ease and certainty, and to know the quantities sold within certain seasons.

Better prices may be obtained if sales warrant large purchases, but do not be tempted to overbuy to save a small percentage, as there is an equal chance of greater proportionate loss, in time required to dispose of stock, depreciation in goods themselves, and the possibility that the following season may bring more desirable goods and at lower prices.

Determine which house you prefer to deal with, and if possible buy all the goods in any one line, in one place and at one time.

In that way the stock is better balanced, values are apparent to customers, and the quantity purchased will probably warrant the wholesaler in offering a fair discount. This should be considered as an extra profit, and not immediately given away. Moreover, should certain styles not sell, such goods can be "marked down" and yet be sold without loss.

Many retailers spend valuable time in going over lines of samples, buying small quantities at long prices, and end by being out of stock at the slightest unusual demand.

It is most important that the buyer should devote a certain amount of time to shopping.

He should stop at the various wholesale houses, become acquainted with their special lines and facilities, and look at new goods they may have to show.

It is not a waste of time; it is often a good investment with large proportionate returns.

A cartoon in a daily paper impresses more people than a four-column editorial, and a few moments devoted to samples in a good show-room is not only instructive, but will unconsciously lead to improvement in stock.

Profit can be had in watching the "Fads" of the hour. These are numerous in the sundries department, and in patent medicines as well.

Note requests for new articles, and obtain from the wholesale trade information concerning packages and costs.

In this way a customer is held, by receiving definite information and prices, and is usually willing to wait until the articles can be sent for.

This calls to mind a branch of buying that is very important and difficult.

A customer asks for a special item not in stock. If the order is placed and accepted, obtain quickly and tactfully, as full a description as possible of the article desired, and include this with order sent to jobber.

If the order is filled to the satisfaction of the customer, he usually thinks very little about it; but if a mistake is made the article will be rejected when called for, and must be put in stock or returned to the wholesale house at more or less expense, and all parties to the transaction are dissatisfied.

In sending special or hurried orders take time to read them over carefully, and see that necessary details are included. Failure to do so causes either a pure guess on the part of the wholesaler or a delay of several days.

If not necessary, do not positively specify brands, they may not be obtainable for prompt shipment, add the word "preferred."

One disadvantage a retail druggist labors under is that he is trained in pharmacy as a profession, and later finds that nearly one-half of the goods he sells are sundries and toilet articles, and when he realizes that he is also a merchant, and studies from day to day what that implies, his sundries will be an important source of profit.

PRESERVATION—DISPLAY AND SALE.

I have heard it said that stock commences to spoil from the moment it is received.

Two friends protect it, good order and cleanliness. Its enemies are many: dust, light, heat, moisture, cold, age, vermin and theft.

Above all, treat stock well, store and handle it with care; if it is tossed about and neglected, customers will notice it, and think it must have little or no value.

Take the average store with three to five employees, the competent people working from twelve to eighteen hours at a time. There is little energy or disposition to fix up show windows, clean cases, or re-arrange sundries.

The ideal condition is to have all goods in dust-proof cases, and out of sunlight.

Perfumery of all kinds loses color and quality when in bright light, and necks and stoppers of large, open bottles must be carefully cleaned to preserve the balance of the contents.

Brushes of all kinds with wood backs, depreciate rapidly from careless handling, as it is almost impossible to remove scratches from varnished backs or straighten bent bristles.

It is difficult to wash the bristles without spoiling the polish, and in the case of bone-handled goods, such as tooth and nail brushes, water takes all the polish off.

Tooth brushes should be kept as long as possible in the original boxes, and open stock in trays or baskets.

Heaping them up, or picking them up in handfuls, causes bent bristles, black spots where bones rub together, and in short, is not calculated to impress buyers of the best qualities.

Thousands of dollars are spent to deliver surgical supplies in perfect condition; why should not similar care be extended to sundries?

Toilet soaps, without an inner wrapper of foil or wax paper, are affected by atmospheric conditions, moisture either causing the soap to spoil the wrappers, or the reverse.

Bleached sponges gather dust, and the more they are washed, the darker and more unattractive they become.

Chamois skins, unless very carefully handled and covered, deteriorate in appearance, and will hardly bring half their value.

Razor strops with a coating of fine dust on the waxed canvas or oiled leather, are worse than useless.

Heat is destructive to celluloid goods, to mirrors in wood frames, to shell or horn combs, cosmetics, and candies, soft or hard.

Light will injure hard-rubber dressing combs, destroying the polish and turning them a dull speckled-brown.

I might go on indefinitely through a stock list.

Soft-rubber goods form a large portion of the modern sundries stock, and too little attention has been paid to their care.

Many people imagine that nothing can hurt them. On the contrary, unless carefully watched, they will prove a total loss.

Practically all such goods sold are compounds, the formulæ of which are carefully guarded secrets of the various manufacturers.

The poorest goods to carry in stock for a length of time are those made with the least rubber, and those nearest pure rubber, the good compound, far outlasts them.

A rubber band, for instance, does not last long if left exposed to the air, and it is almost pure rubber.

Rubber is used in water bottles, fountain syringes and similar goods, to obtain *flexibility*, not *elasticity*.

In bands, surgeons' bandages, dental dams, etc., elasticity is necessary, and the distinction in these two classes of goods should be carefully borne in mind.

A good illustration of the difference in compounds is to compare them to the products of bakeries.

Ingredients vary according to the price to be obtained for the goods; but upon the personal knowledge and skill of the men in charge of the compounding and vulcanizing depends the actual quality of the finished product.

From lack of proper care or miscalculation at this stage of the process, occasionally the products of the best factories spoil in a comparatively short time, and yet when shipped, would pass average inspection.

Rubber has no fiber; once cut, it tears readily. Make a slit with knife or scissors in a piece of fine dental dam, and it will probably tear in a straight line; punch a round hold with a sharp punch, and you can stretch the material and enlarge the opening in any direction.

Heat and exposure to air seem to dry out soft-rubber compounds and disintegrate them, and if oil or glycerin come in contact with them they soften at once.

But two or three drops of glycerin in a tablespoonful of water will clean the dark chocolate-brown or red rubber and make it look almost new.

Too frequent treatment of this kind is, of course, injurious. Black and maroon goods often have a gray appearance. This is caused by the sulphur, required in the process of vulcanization, coming to the surface.

It can be removed by boiling in a solution of potash or caustic soda, but this method considerably shortens the life of the goods.

A large portion of the troubles of the retail trade are with water-bottles, and as the public never treats them with consideration, it is well to see that a caution slip is packed with every bottle sold, and call the customer's attention to it.

After many changes, I am using the following form:

RUBBER WATER-BOTTLES

Are carefully tested and inspected before leaving the factory, and can only be exchanged at the option of the manufacturer. If you want to take the best care of any water-bottle

YOU

Must not use boiling water.

Must not fill bottles more than two-thirds full.

Must not let let any oil or grease come in contact with the bottle, inside or out.

Must not expect bottle to stand daily use.

YOU MUST REMEMBER

To hang up bottle by ring, mouth down, so as to drain and dry thoroughly, and with stopper out.

That goods made of rubber must be carefully used; they will not stand abuse.

That water-bottles will not last forever, but only a moderate length of time, dependent on the care they receive.

When bottles are purchased it is well to inflate them slightly, just enough to keep them from getting or looking flat.

It decidedly improves their appeance when displayed for sale.

Cloth-inserted bottles are the most durable, but bottles that can be "stretched" lose shape when filled, and spoil sooner if boiling water is placed in them.

Cold hardens compound goods, and many water-bottles, especially of cheaper grades, if folded and left in a very cold place, will crack if opened quickly.

Variation in temperature must be avoided, as sudden and decided changes may almost ruin an entire stock.

Tubing that will "stretch like a band" is of little use for Fountain Syringes. Flexibility is more important, and *the wall* should be *heavy enough not to kink.*

Elastic tubing usually has a thin wall, and kinks readily.

It is best to pack all water-bottles, fountain syringes, and similar goods in flat boxes, and then keep the boxes *flat.* Never store on side or end.

The item of first importance in the sale of sundries is space. Some department stores have more space than stock, yet the space permits the customers to examine the stock.

Use the front of the store for sundries, put all stock bottles in the prescription section.

Most stores are too small to carry on a good sundries business, and the crowding of stock is one of the principal causes of depreciation.

Goods are piled up, topple over, lids come off boxes, bottles of perfumery fall on their sides and leak, especially if they have glass stoppers; dust quickly gathers, and when a customer rejects a package because it looks "tired" the proprietor has an attack of the "blues."

What he is actually competing with is the great space, the large force of employees to clean and arrange, and the high-priced display director of the department store.

I believe in clear floor space, wall cases, a small scale and wrapping counter, and, if the store covers a double lot, tables or deep show-cases in the center, but the kind that customers can walk all around.

After many experiments with wall show-cases for wholesale use, I had one built consisting of ten sections, each 8 feet tall, 38 inches wide, and 20 inches deep, with sliding door and single light of glass.

The base, 22 inches high, was not utilized, but could be filled with drawers or cupboards. Each section has four shelves, and three half shelves 10 inches deep, placed at the back of the case. All are adjustable in the manner of book-cases.

After two or three years' experience I am convinced that a retail store fitted with similar cases, can display effectively a small or large stock, and have it well protected from dust and petty theft.

Inexpensive wire easels hold carded goods in position to attract attention, and a light table can be kept in the store, and moved in front of any open case, if counter room is required to show goods.

There are no rules or text-books to guide one in the druggists' sundries business; each one must work out the problem for himself, but a stock well cared for, of good quality, and selected with judgment, cannot fail to repay in full the attention given it.

COMMERCIAL POSSIBILITIES OF LOCAL BRANCHES OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

BY M. I. WILBERT, PHILADELPHIA.

That the immediate future must bring with it radical changes in the drug and apothecary business is evident to all who have given the passing events, in the drug line, even cursory attention.

While it would be idle speculation to attempt to point out the exact nature of these changes or to describe the method of their being brought about, we all realize that there are indications, readily apparent, which appear to point out the direction from which the initiative for these changes may properly be expected.

These indications are perhaps best evidenced by the apathy and the general disinterestedness of so-called pharmacists in matters relating to the professional, or the scientific side of their calling, and, more particularly, in the failure of a very appreciable number of pharmacists to take advantage of, or even to appreciate, the more exacting and more stringent requirements that have been included in the recent eighth decennial revision of the Pharmacopœia of the United States.

Among other evident indications of impending changes I may be permitted to point out to you that physicians are taking a much more active interest in matters relating to Materia Medica and Pharmacy than ever before and that they, in common with an appreciable number of the lay-public, have been aroused and horrified by the exposures that have been made, in lay-journals, of the fraud and deception that is now being practiced in connection with so-called patent or proprietary medicines. The more direct effect of these exposures has already manifested itself in the laws that have been proposed, or enacted, in several States to control, or at least to restrict the sale of secret or of harmful medicaments, and also, to a more evident degree, by the drug sections of the recently enacted "Federal Pure Food Law." All of these several indications would appear to suggest that unless we, as pharmacists, recognize and tend to correct our own shortcomings we will have imposed on us the added humiliation of having our faults and foibles exposed and regulated by efforts from without.

To more thoroughly appreciate some of the reasons why the retail drug business, as at present constituted, does not come up to the requirements that might reasonably be expected of it, let us attempt to analyze the present-day business of a retail drug-store into its constituent parts. While local conditions must, and do, play a very important part in determining the class or variety of merchandise that is usually sold in connection with drugs, the retail drug business, under more favorable conditions may be said to be composed of:

(a) The sale of patent or proprietary medicines.

(b) The dispensing of soda water and the sale of cigars.
(c) The sale of sundries, such as toilet articles and sick room supplies.
(d) The sale of drugs and preparations for household use.
(e) The compounding of prescriptions.
(f) The supplying of certain conveniences to the public.

The latter item, while it admittedly entails considerable work on the part of the proprietor or his clerks, may usually be ignored so far as the direct monetary return or the direct profit to be derived from it is concerned.

This classification may further be extended so as to include actual figures of the proportionate amount of the total receipts, the time that must necessarily be expended on the several departments and the per cent. of the gross or of the actual profit that may be expected from the several classes. This I have attempted to do in the annexed table and while the figures are necessarily approximate they probably represent a very fair average of the business done in retail drug-stores at the present time.

ANALYSIS OF THE AVERAGE RETAIL DRUG-STORE BUSINESS.

Class of Articles.	Per cent. of Sales.	Per cent. of Time Required.	Per cent. of Profit.
Patent medicines	30	10	05
Soda water and cigars	20	15	15
Sundries	15	15	10
Drugs	15	20	30
Prescriptions	20	30	40
Conveniences	00	10	00

The most evident feature in connection with this attempted analysis of the business done in retail drug-stores is the suggestion that we, as supposedly professional or semi-professional individuals, with well defined duties to the body politic, are attempting to, and in many cases actually do compete with charlatans and quacks, with confectioners, with tobacconists and with refreshment saloons or quick-lunch establishments.

Altogether it would appear that at least 50 per cent. of the business that is now being done in the average retail pharmacy could be done equally well if not better in connection with the branch of trade to which it more properly belongs. In addition to this it would be more difficult to demonstrate that this extraneous portion of our business is neither elevating nor profitable and that, in reality, it constitutes a serious menace to the continuation of the practice of pharmacy as a distinctly honorable occupation. Of the several extraneous departments of the present-day retail drug business that serve to detract materially from it, from a scientific point of view, the sale of secret remedies or nostrums is undoubtedly the most objectionable, if not the most humiliating. It has repeatedly been asserted that patent medicines constitute a necessary part of our stock in trade, and that so long as there is a public demand for them we are virtually obliged to sell them. Even if this really questionable assertion were true it would not excuse the fact that individually or collectively we have made little or no effort to rid ourselves of this really objectionable portion of our business, but have, on the other hand, even encouraged the use or sale of objectionable nostrums by offering a line of just as good (or better) preparations as substitutes for the more widely advertised secret remedies.

While it is true that the practice of selling and even of preparing specifics for the cure of what were, at one time, considered to be well-defined diseases, was, and is even now, considered to be one of the prerogatives of the practice of pharmacy, we dare not lose sight of the fact that practices must change in keeping with new ideas, and that the practice of pharmacy must take its part in the general progress of other lines, and adapt itself accordingly. In the light of the fuller light that comes to us as the result of modern research and study, we must recognize that what we ordinarily term disease is in reality a symptom complex that may and does vary in its nature and intensity, and that, therefore, we can no longer think of it as an entity that may be attacked and vanquished by a simple mixture of heterogeneous substances called medicine. The retail druggist who persists in preparing, or even of promiscuously selling concoctions designated as blood purifiers, liver regulators, dyspepsia cures, catarrh cures, headache cures, cough cures and soothing syrups, either admits himself to be ignorant of the present-day advances in the science of medicine, or convicts himself as an arrant knave, to whom the meager profit which he derives from the sale of such preparations is of greater importance than the health and the welfare of the community.

For the really honest and earnest pharmacist the manufacture and even the sale of nostrums is rapidly losing importance as an ethical question, and is becoming a simple commercial problem as to how he can rid himself of this really undesirable incubus without appearing to encroach on the admitted right of all of us to prescribe for ourselves within certain limitations. The retail druggist, on the other hand, who persists in the manufacture or in the promiscuous sale of nostrums, will ultimately learn that he is engaged in a business that is inimical to the public good, that he is not living up to his responsibilities as a protector of the public health, and that, eventually at least, the finger of public scorn will point him out as one who has signally failed in gaining or retaining the confidence and the respect of his fellowman.

The assertion that a fair proportion of our present-day business is not compatible with the best interests of the public welfare, will naturally suggest the question: What is to become of the retail druggist, who, under present conditions, is not in a position to eke out more than a meager existence? The answer to this pertinent and admittedly important question must necessarily be that it will naturally resolve itself into a survival of the fittest, and that the actual number of stores should be, must be, materially reduced.

The adage that the world owes each one of us a living cannot be construed into meaning that the world owes each of us a living as a pharmacist, unless we are willing, and fully able to live up to and to honestly act the part. If we are willing to do this by forsaking the questionable empiric practices of by-gone decades and by actually becoming producers, originators or scientists, we will find that we have before us a wide field of usefulness and a sphere of activity that, while it may not assure to each of us success from a monetary point of view, will certainly secure for us that success or feeling of satisfaction that is the inevitable accompaniment of a full realization of work well done.

In the prospective evolution of the practice of pharmacy into its logical position as an important factor in the conservation of the public health, the local branches of the American Pharmaceutical Association can be made to take an active and a very important part. In this connection it will not be necessary for me to point out to you that the more frequent association, and the accompanying interchange of thought, between persons engaged in the same line of work, research or investigation must of itself lead to a more thorough understanding of the ideas, ideals and possibilities of the several individuals and must further lead up to a willingness to co-operate along lines that will prove to be mutually beneficial.

Appreciating the possibilities of a better understanding that must result from more frequent association, we can readily appreciate how the united efforts of the local branches can be developed as potent factors for the education of the public as well as of members of the medical profession and how this educational influence must in turn react creditably on the individual members of the several branches. It is also readily possible to conceive how this co-operation, in educating the public in regard to the duties, responsibilities and capabilities of the pharmacist, may ultimately lead up to an even more practical co-operation, or a concentration of forces on the part of a number of pharmacists for the purpose of further developing the special adaptabilities or the resources of the several individuals.

That such a concentration of forces will be necessary to develop practical specialization in the various branches of pharmacy, must appeal to all who are in any way familiar with the narrowing influences that must result from the limited possibilities, close confinement and inordinately long hours in connection with the retail drug business as conducted at the present time.

The broadening influence of more frequent association and of friendly co-operation or concentration, will of itself lead to a marked reduction in the number of retail stores, a more economic method of conducting the commercial portion of the business and a development of the scientific or more professional side of pharmacy in a way that would be absolutely impossible under present conditions.

Concentration would also tend to eliminate entirely the periodic complaint of scarcity of assistants, as fewer would be required and they in turn would be assured of shorter hours, more congenial surroundings and infinitely better compensation.

It goes without saying that even with a reasonably strong development of the local branches of this Association along the proper lines, the regulation of pharmacy and the periodic examination or revision of the several stores, that has been so successfully accomplished by force of law in Europe, could be done equally well and infinitely more satisfactorily by a joint commission or Board of Censors appointed by the local medical and pharmaceutical societies, and would go far indeed towards establishing the practice of pharmacy on a plane of excellence never before attainable.

In conclusion let me recapitulate briefly the advantages that I believe to be readily attainable by organization and co-operation along professional lines.

By more frequent association and mutual co-operation to educate and to properly advise physicians and the public, we can readily enlarge on our field of usefulness and can thus develop the more congenial and more remunerative branches of our work or occupation; we can, gradually at least, eliminate all objectionable and unnecessary side-lines and confine ourselves more directly and more consistently to the practice of pharmacy in the highest and most acceptable sense of the word. This of itself will insure for us higher ideals, greater accomplishments and a broader and more optimistic point of view.

The elimination of the more directly trade branches of our business, and the accompanying development of the science of pharmacy will further lead to a higher degree of self-respect and a due appreciation of the rights and privileges of others in the same line of pursuit, and will, in addition, assure us and our assistants of more congenial surroundings, shorter hours, better compensation and that ultimate sense of satisfaction that can only accrue from a thorough realization that we have freely contributed, to the best of our ability, to promote and to advance the public good.

THE IDENTIFICATION OF CHEMICALS BY THEIR PHYSICAL CHARACTERISTICS.

BY GEORGE M. BERINGER, CAMDEN, N. J.

The ability to recognize drugs, chemicals and pharmaceuticals by their microscopical characters is a very important part of the training of the pharmacist, which is too often neglected. It is not such a knowledge as can be obtained from books and teachers, as these can supply an outline only; but it must be acquired by personal observation and personal application. The value of such knowledge in the discovery of error, and in the prevention of accident has been repeatedly demonstrated.

By application of very simple principles the pharmacist can soon become an expert in promptly identifying a great many chemicals and much practical information can even thus be obtained by the chemist in the way of surmises for confirmation by chemical tests. This knowledge is based upon the fact that each product possesses one or more gross characters that appeal to our senses and to become accomplished, requires the cultivation of the habit of careful and critical observation, of a retentive memory and of the custom of making deductions or drawing conclusions.

That the habit of close observation is grossly and almost universally neglected becomes apparent when you ask almost anyone to describe accurately an article or a place such as, for instance, a room that he has just left. The ability to draw conclusions or deductions is a mental acquisition quite as important to the expert chemist as to the modern Sherlock Holmes.

The visible characteristics of each chemical appeal to some one or more of our senses and from the impressions so made, and from our recollections of previous acquaintance and impressions then made, we are led to draw conclusions. In the scope of this paper the writer can not hope to do more than designate how these impressions can be most forcefully and plainly received, and how by thought and study the mind becomes more receptive and the impressions become more accentuated.

By the sense of sight we receive possibly the most valuable aid. We obtain through this agency an idea of color, and this should be carefully noted and the eye trained to distinguish slight differences in shades. We note and memorize that many of the so-called white chemicals have a tint, as zinc oxide, yellow; sodium salicylate, a tendency to pink even when pure; and cerium oxalate, despite the pharmacopœial description, is more or less pink, while precipitated calcium carbonate and magnesium carbonate are white. These shades of color can be made more distinct by rubbing with the moistened finger a small portion of the substance on a piece of white paper or porcelain.

Many crystals have a distinct luster, and this should always be noted. For example, boric acid and zinc acetate have a pearly luster, phenacetin a glistening, silver nitrate commonly a grayish luster, potassium permanganate a blue luster.

The form of the material is a valuable clue to its identity, and should be examined critically. If in lumps, are they composed of amorphous masses or conglomerated crystals, or merely powdered material that has become agglutinated? If crystalline, the character or system of the crystals should be noted, thus silver nitrate crystals are tabular and rhombic, potassium chlorate are plates, potassium nitrate six-sided prisms, acetanilid and phenacetin are micaceous crystalline laminæ, or a crystalline powder showing that the crystals have been comminuted, benzoic and gallic acids are needles more or less interlaced. If powder, the eye alone will usually tell if it is amorphous or composed of crushed crystals. The degree of fineness is an important factor, and can be judged pretty accurately in several simple tests through the sense of touch. The most common is to rub a portion on the palm of the hand or on a piece of paper or glass; another is to place a small portion on the tongue and rub this against the roof of the mouth. Still another test is to rub a minute portion on the surface of the front teeth, and then apply the tongue. These latter, rough-and-ready tests as they are, will nevertheless enable you to distinguish the impalpable powder from the gritty, and the varying degrees between, as well as the evenness of the powdering.

The permanency of the substance in the air should be noted. The eye alone will tell the varying tendencies to deliquesce as indicated by potassium acetate, potassium carbonate, potassium citrate and potassium bicarbonate.

In liquids the consistence must be noted, whether oily, like sulphuric acid, syrupy, like phosphoric acid, lactic acid and glycerin, or mobile, like alcohol and acetone. Likewise must we note the rapidity of diffusion or evaporation when a small amount is allowed to evaporate from a watch crystal or from a piece of filter-paper.

The sense of taste, next to sight, gives us the most valuable ideas of the physical characteristics of chemicals, and the impressions from these two will frequently guide one to a conclusion. To illustrate, the writer in one investigation had occasion to examine nearly two hundred samples of phenacetin, and in almost every instance the taste alone was sufficient for him to distinguish between the genuine and the sophisticated article.

While acetanilid can be prepared in crystalline powder closely simulating powdered phenacetin, the druggist should be acquainted with the peculiar, almost burning taste of acetanilid, and the fact that phenacetin is practically tasteless. If the several hundred druggists throughout the country had only applied the simple test of the tongue to the product offered, they would not in most cases have been duped by peddlers of the sophisticated stuff, and their professional reputation jeopardized. This only emphasizes the necessity of the pharmacist familiarizing himself with the physical characters of medicines.

In tasting chemicals it should be done cautiously. If active poisons are suspected, use a needle to transmit a very minute portion to the tip of the tongue. Otherwise, I prefer to place with the finger-touch a small amount on the tongue and carry the tongue to the roof of the mouth so as to at once determine the fineness of a powder along with the taste. It is difficult to separate the two impressions conveyed by taste and touch simultaneously, and in fact their association is usually valuable. Thus cream-of-tartar and sugar-of-milk similarly treated both give an impression of grittiness to the tongue, but the first is followed by a pleasant acidulous taste, the latter by a mild sweet taste.

The sense of taste is very discriminating and with a little study one is soon enabled to distinguish accurately chemicals as being acrid, pungent, burning, warm, sharp, biting, tingling, numbing, cooling, aromatic, caustic, saline, alkaline, earthy, astringent, puckering, metallic (slightly or strongly), acid (from faintly acidulous to pure or strongly acid), sweet (with all shades of variations), bitter (with the widest range and qualification, from the faint bitterness of antipyrin to the extreme bitterness of strychnine). As we know the potassium salts have a peculiar alkaline taste which characterizes them at once and the sodium salts commonly a similar distinctive taste which has been called a soda taste. The salicylates have a decided sweetish after-taste and in the benzoates we find a distinctive aromatic, faintly sweet and astringent taste.

Odor is an important characteristic in the identification of chemicals and is characterized by nearly as many qualifying adjectives as taste. In applying this test care should be taken to prevent injury to the mucous surfaces by too free inhalations of such irritating substances as ammonia, formaldehyde, sulphurous acid, etc. Where possible the odor should be obtained by igniting a small portion if solid, and if liquid by evaporating a few drops from a watch crystal or a piece of filter-paper. With volatile liquids odor is a distinguishing feature usually very readily identified; and with many solids even less odorous than iodoform it is a valuable indication, as in benzoic acid, salol, and the iodides which usually possess a faint but distinctive odor of iodine, and in the acetates which frequently possess a faint acetous odor.

The sense of touch already alluded to comes to our aid in several ways, as it gives us indications if the substance is hard, soft, elastic, pliable, readily broken or crushed, if finely or coarsely powdered, if smooth, rough, harsh, waxy, unctuous, moist or dry. Through this sense we obtain another valuable piece of information, whether the article is light or heavy. The ponderosity of our wares calls for careful consideration as one of the most valuable physical characteristics.

It must be borne in mind that in thus determining chemicals the impressions received through only one avenue or sense should not be considered alone; but in association with the information obtained from all should deductions be made. Thus potassium chlorate crystals may resemble in appearance crystals of silver nitrate, but the weight of the silver salt and its bitter metallic taste differing so radically from the cooling and peculiar taste of the potassium chlorate enables one to distinguish these at once.

Zinc acetate and crystals of boric acid both have a pearly lustre, yet when we rub the zinc salt we usually obtain a faint acetous odor, and its taste is astringent and metallic. When, however, we rub the crystals of boric acid we note at once a peculiar, distinctive greasy touch, no odor, and the taste is but faintly bitter and not metallic, so there is no trouble in promptly drawing a conclusion.

Bismuth subgallate and yellow mercurous iodide are both, when freshly made, bright yellow amorphous powders, yet one should be able to immediately distinguish both by the difference in weight.

THE PHARMACIST'S VALUABLE BIRTHRIGHT; WHAT WILL HE DO WITH IT.

BY LOUIS SCHULZE.

The above question seems most opportune since it appears as though pharmacy had arrived at the parting of the ways; just where one road leads away from all that is professional and toward quackery and charlatanism, as represented by certain manufacturers of the so-called "patent medicines," and another sign-post points toward a closer alliance with the physician, his restored confidence in the pharmacist, and the elevation of the latter to the high and honorable position he should occupy in the community. All of which is surely the birthright of the pharmacist, for which he has been fitted by education, by practice, by experience.

Being able to prepare the remedies of the U. S. P. and National Formulary and to combine them *secundem artem* when prescribed, by the physician, and with physicians, through the A. M. A. and the local associations thereof, showing themselves willing to aid in the advancement of pharmacy as a profession, why should the pharmacist sell his birthright and lend aid to the manufacturers of proprietary and "patent" medicines by opposing legislation advocated by physicians?

As this is a paper for the Commercial Section, let us consider what profit might be derived by the sale of this birthright. Is it not a fact that the sale of patent medicines has been largely a mere matter of accommodation, on which the manufacturer has grown wealthy, and while continuing to assure the retailer of his wish to establish profitable prices, does he not deliberately sell to whomsoever he pleases notwithstanding tripartite and other agreements?

During the third week of June, suit was brought against a cut-rate druggist in Baltimore to collect an account of $250.00 alleged to be due a tripartite manufacturer. According to his contract, what right had he to sell this retailer?

Again, a direct-contract, serial-number manufacturer being informed that his goods were being cut, sent his agent to Baltimore who very kindly informed every retailer in that city by mail that he had arrived and meant to see that their contracts were not violated. Surely a very thougtful method of pursuing his work. Just think what clean and hygienically arranged slaughter-houses the committee appointed by President Roosevelt might have found had they notified the packers of the purpose of their visit, or how nicely that young man Garfield could have had proved to him that the Standard Oil Company is no trust, had he only expressed to that corporation his desire to be enlightened!

In view of these facts as well as the advertisements seen in our daily papers, the resolutions passed at the late meeting of certain interests "not to be extravagant in advertising" sound very much like the remarks of one of Dickens' celebrated characters: "Don't be wiolent, Bill, don't be wiolent." No reader of Oliver Twist would for a moment say aught else than that it would have been better for Nancy Sykes had she heeded the plea of Rose Malies and parted from those who had dragged her down to the level she occupied; and well might a comparison be made here: because they have the money and imagine this all-sufficient, one does not have to exercise his gray matter very much to find the Bill Sykes; the Fagins can also readily be discovered; Oliver Twist, who falling among evil associates remains honest, can be found back of many a drug counter striving for a better and nobler condition of his high and honorable calling; the Nancy Sykes type can also be found back of the drug counter in those who are hearing the plea for better things and hesitating whither to turn. The question is, Will they heed, or like Dickens' misguided character, will they cling to Bill Sykes to ultimately meet (professionally) a similar fate? In conclusion let us take a look at the profit of co-operating with the physician and encouraging him to use the remedies of the U. S. P. and National Formulary. From a commercial side the earth poultices so frequently used at present can be made by the pharmacist for one-fifth the price he pays for them when purchasing the various brands on the market; the same holds good in regard to other preparations contained in the U. S. P. and National Formulary.

As to the profit to be made in dispensing preparations of the National Formulary when simple household remedies, for which trade will not call in a physician, are demanded, anyone that has dispensed a few ounces of soda mint or compound syrup of white pine would surely not prefer to have dispensed any kind or no contract patent whether it contained the formula on label or not.

Indications are that by choosing the path that will bring about closer relations with the physician, the pharmacist will be recognized as belonging to a high and honorable profession; therefore, brother pharmacists, will you follow the Fagins and Sykeses, or will you look to better and nobler things? Are you satisfied to remain amid the surroundings you have been forced into or will you arise and claim your birthright?

These are questions each pharmacist must answer for himself. If you adhere to the first and reject the last, you should disregard the title of pharmacist, as then you have sold your birthright. For only those are worthy of the title who earnestly strive with the physician to advance their branch of medical science.

THE PRESERVATION OF CHEMICALS.

BY GEORGE M. BERINGER, CAMDEN, N. J.

Chemicals form a large and important part of the stock in trade of the pharmacist, and the preservation of the purity and activity of these must necessarily claim a share of his time and attention.

The most common causes of the deterioration of chemical products are exposure to light, heat, moisture, atmospheric vapors, oxidation due to unfilled bottles and frequent opening or imperfect closure, imperfect packing, careless handling and improper storage, contamination incident to manufacture or due to accident. The practical pharmacist will recall many instances of each of these.

The protection of chemical products has properly received increased and marked attention in the eighth revision of the United States Pharmacopœia and in nearly every chemical the description is accompanied by specific instructions for preservation. For example sulphurous acid is directed to be kept "in dark amber-colored glass-stoppered bottles, which should be completely filled and in a dark place." In some of the official chemicals the Pharmacopœia has overlooked these instructions where they might with equal propriety have been added. Among such we may mention tannic acid, saccharin, bismuth citrate, and bismuth subgallate.

As the pharmacist usually retains his chemicals in the containers supplied by the manufacturers or jobbers it becomes their responsibility to provide correct packages and they should carefully heed the official directions. In the main the official instructions are correct and should be followed by manufacturers. We must note, however, certain common deviations from official instructions which should be promptly corrected, such as supplying benzoic acid, beta naphthol, resorcin and santonin in cartons instead of amber-colored bottles. In a few instances trade experience has demonstrated the utility of a style of package not recognized by the Pharmacopœia, for instance, pyrogallol instead of being dispensed in "dark amber-colored bottles" as directed by the Pharmacopœia is commonly sold in black painted cans and these are usually wrapped in black paper. Its use is most largely in photography where this style of package has proven very satisfactory. Where there is no well defined reason for change the pharmacopœial instructions should accept established trade packages.

An examination of the price-lists issued by chemical mauufacturers at the present time, will show nearly every item accompanied by a statement of the character of the container used, and a comparison of these lists with similar ones issued twenty or thirty years ago, will demonstrate a marked improvement in the methods of packing and trade preservation of chemicals, and will illustrate the greatly increased attention that this is receiving from manufacturers. For the most part, these containers specified are satisfactory, and are such as usage has decided to be serviceable.

This appears to be the age of cartons, and the carton and utility box are rapidly displacing the paper-wrapped package. The former has now become so popular that they are being extensively used in place of bottles and cans, and for some articles where their use is not advisable. For chemicals the use of the carton should be restricted to small packages of non-volatile substances that are not injured by exposure to the atmosphere. For large quantities of staple chemicals, even, it is inferior to the can or bottle, as it is more apt to become broken and the contents become exposed to dust, admixture and contamination from the atmosphere. It is likewise too fragile to be used for any poisons, and the danger of accident should preclude such usage. The use of the carton as an outer covering to protect substances contained in glass from exposure to sunlight and breakage is highly commended and should be extended.

The heavier common chemicals, such as alum, borax, glauber salt, epsom salt, and rochelle salt, usually packed in barrels and boxes, are very prone to contamination from careless packing and careless handling in the storeroom. Broken barrel-heads and box-lids should not be permitted. Contents of barrels should be protected by clean paper, and above this barrel covers properly labeled and always preserved for same chemicals. I find it preferable to transfer such chemicals as sodium phosphate and rochelle salt purchased in large quantity to large cans (commonly called lard cans) previously lined with parchment paper and the lids rendered practically air-tight by means of a paper covering beneath the lid. The ingenuity of the inventor has supplied barrel linings and box linings of paper or muslin, and that the careful manufacturers are now using these on many such heavy chemicals is another evidence of the increased attention given to preservation.

In the storing of chemical products the druggists frequently exhibit gross carelessness or lack of forethought. Epsom salt stored near a heater to be contaminated with dust and rendered unsightly by efflorescence, and borax or alum similarly stored rendered dirty and baked into lumps are but examples of such errors.

It is the consensus of opinion that chemical products are best protected by the use of amber-colored glass bottles, and the use of such is growing rapidly among the manufacturers, but needs to be still more extended. Pharmacists should bear this in mind in the fitting up of their stores, and amber-colored tincture and salt-mouth bottles should be provided for most chemicals.

In the arrangement of a pharmacist's stock of chemicals careful consideration should be given to the tendency of each to deliquesce or effloresce, and they should be systematically arranged with a knowledge of such tendency. Cleanliness and perfect closure are two essentials, and the selection of good corks, covered beneath with parchment paper, will preserve nearly all such stock in the trade.

There are still certain trade packages that are not entirely satisfactory.

Among these may be mentioned the small hermetically-sealed tubes, in which the rare alkaloids are usually furnished by the manufacturers. It has been customary to open these by filing and breaking off the end, and in doing so the glass is apt to be fractured, resulting in particles being mixed with the product, and the opening is usually so irregular and so small that it is difficult to extract the material with any pharmaceutical tool or to subsequently cork up so as to preserve the unused portion. The writer suggests that in opening such the contents be shaken to the nether end, and the upper end be cautiously heated in the tip of a blow-pipe flame, and when melted pierced with a wire or file end, and as soon as cool the contents should be removed to a small vial and tightly corked. I prefer for this purpose what is commonly spoken of as a chloride-of-gold vial.

It is my custom to keep a duplicate stock of each of these tubes of rarer alkaloids in powder boxes properly labeled and arranged alphabetically in a special case in a cool part of the store. Duplicate stocks of the opium alkaloids, cocaine, atropine, veratrine, etc., are stored in an adjoining case, and these special cases are near enough for access to the prescription counter where the open vial of each only is permitted.

Duplicate stock of chemicals should not be permitted to lie around in packages, but should be put in bottles or cans and stored away carefully so as to protect from the action of light, heat, air, moisture and vapors. Cans are not suited for deliquescent substances, and even when used for stable chemicals should be carefully lined with paraffined or parchment paper. Acids and ammonia are preferably stored in the cellar or at least in separate room from finer pure chemicals.

For some products a special method of preservation has been found advantageous. For example, ammonium carbonate can be very readily preserved by placing in the bottom of the bottle some absorbent cotton saturated with concentrated ammonia water. In the absence of glass stoppers the corks of such bottles should be protected with white parchment paper.

Deterioration in some chemicals by the action of light and exposure might be anticipated by the manufacturers, and preventive means could frequently be adopted in their preparation. In the writer's opinion ammonium valerate should be prepared alkaline, and not acid as permitted by the Pharmacopœia. The alkaline iodides should be permitted to contain from ½ to 1 per cent. of the alkali carbonate, so as to prevent the liberation of free iodine. This in the ammonium iodide especially would be desirable. Strontium iodide, which is very prone to decomposition, and is frequently sold when deeply discolored with free iodine, could be rendered more stable and preserved by the addition of but a very small percentage of sodium thiosulphate. In every such case, however, the label should indicate the amount of and the character of the preservative added.

BUYING.

BY STANLEY B. SIMPSON.

The subject of "buying for a retail drug-store" upon which I have been honored with an invitation to express my views before this Association, is an all-important one to every druggist, whether wholesale or retail, and irrespective of the magnitude of the business.

It was therefore with considerable hesitancy and a full realization of my responsibility that I concluded to address this meeting, and I trust that it will not be considered presumptuous on my part if I express myself plainly and without equivocation.

While much has already been said and written on this subject, it is practically inexhaustible and it would require many volumes to do it full justice, and far greater ability than I possess.

I am confident that the members of this Association as well as the drug trade generally are willing to consider suggestions whether the views advanced agree with theirs or not, but I ask your indulgence if at times my remarks may seem to favor the jobber's interests rather than those of the retailer.

My remarks must necessarily be limited and merely represent my individual views acquired from an experience covering a number of years in the wholesale drug business; consequently I will discuss the matter from a jobber's view-point (as I am expected to do) and touch only lightly on the other side of the question.

The science of buying and the methods employed will apply equally well to the manufacturer, the jobber and the retailer with certain modifications dependent upon the various conditions that confront each class.

I will endeavor to confine my remarks to the proper method of buying, in my opinion, for a retail drug-store, including under this title a brief synopsis of my views on matters appertaining to, and which cannot well be separated from, the subject; for the reason that the adjustment of all differences is usually left to the buyer who is usually the proprietor, particularly in the smaller towns.

THE STOCK-BOOK.

One of the essential, and in fact the initial, step to modern buying, is a properly arranged stock-book which will allow for additions in alphabetical order and also for expansion. This book can be subdivided to suit the requirements of the ideas of the various dealers. For instance the subdivisions could be drugs and chemicals, druggists' sundries, oils, paints and varnishes, proprietary medicines, etc. Every article carried in stock should be entered under the proper heading alphabetically, even though the item may seem unimportant and one for which the demand is limited.

Deviation from this would only result in confusion, and it is of the utmost importance to follow a systematic plan in keeping a stock-book. The longer a stock-book has been in use the more valuable it becomes. An inventory of stock on hand is necessary as a starting-point in keeping a stock-book. All purchases with cost and date should be entered as soon as the invoice has been checked, and this work should not be neglected or the bills allowed to accumulate.

After a stock-book of the kind mentioned has been kept for a short time it will assist the buyer in deciding approximately what quantities to order to cover a specified period. Loose-leaf stock-books can be purchased of nearly all of the large stationery and book-binding establishments, and the one best adapted to the requirements of the dealer should be secured, whether a loose-leaf book or a plain, inexpensive journal.

With a carefully kept stock-book there is little danger of running out of goods, and this applies particularly to staple items for which there is a regular demand. A dealer can usually anticipate his wants sufficiently in advance, according to his location and the distance from his source of supply, to avoid running out of staple goods, unless in exceptional cases when an unlooked-for demand depletes the stock. A dealer can thus look ahead and order certain lines from a distant market if he finds it to his interest to do so.

The reason I dwell especially on the advantage of a stock-book is because I consider it a necessary adjunct to careful buying.

It is astonishing to learn how many druggists attach little or no importance to it. Of course the larger a business becomes the more necessary it is to have the work systematized, and the more valuable becomes a stock-book, but whether a business is large or small too much importance cannot be given it.

WHAT A STOCK-BOOK WILL ACCOMPLISH.

It will prevent over-stocking and also running out of staple goods.

It will prove a valuable guide to prices and terms.

It will enable dealers to increase quantities on staple articles, thereby securing better prices or quantity discounts.

It will reduce the details of a business by having all the information necessary for the careful buyer in a compact and readily accessible form.

It will prove serviceable in case of an adjustment of fire losses.

It will be a ready reference and of incalculable value to new clerks who may not be entirely familiar with the stock.

The drug business is one of innumerable details, owing to the multiplicity of remedies now being manufactured, and a systematic plan must be followed in ordering goods to avoid both over-stocking, and what is nearly as serious, under-stocking. It is a matter of surprise and regret to those familiar with the jobbing business to note the growing tendency to order staple goods in fractional quantities, and these orders are repeated with increasing regularity, especially if the dealer is located near a distributing center.

For various reasons this "hand to mouth" ordering may be justified in some instances, but with a properly kept stock-book goods could be ordered with greater confidence, and the chances of over-stocking would be reduced to a minimum.

This applies to drugs, chemicals and staple sundries, as well as to proprietary medicines, and unquestionably many sales are lost through fear of buying too heavily, all of which could be obviated to a considerable extent by a stock-book.

Orders are received by the jobber bearing notations, indicating that a delay in receiving the goods will result in loss of sales, as well as annoyance to customers. It must be borne in mind that the jobber's stock is sometimes exhausted, and that many items are ordered by the retail trade which are generally not carried in stock by the jobbing houses. It is necessary to "buy out" this latter class of goods, and frequently the jobber is unable to get them in by shipping time, necessitating the holding over of an order one day, or omitting the goods.

The question is, what is best to be done? If the order is held over, the dealer complains of slow service and is inconvenienced, and if the goods are omitted the customer is disappointed and the sale probably lost.

I consider completeness in filling orders as necessary to prompt service; and if retail druggists would endeavor to anticipate their wants sufficiently in advance to overcome any slight delay, the trouble would be minimized. I can recall at least one instance where the dealer claimed the profit on lost sales of a staple proprietary medicine on the grounds that the jobber delayed the execution of the order.

All of these little things add to the details, and consequently the expense of doing business both wholesale and retail. The jobber must necessarily make a reasonable margin of profit over expenses, and therefore the retail druggist bears his share of the burden. It requires more time to prepare an order for small quantities and fractional parts of a dozen than it does an order for full packages, or for reasonable quantities, and the clerical work is the same in either case.

A great many proprietary medicines come in packages of uniform size, and these packages can be handled much more economically than if quantities are broken. The retailer should therefore co-operate with the jobber, as by so doing both would be benefited.

It has been argued that dealers located in or near distributing centers are not compelled to order in as large quantities as those located at a distance, and this is correct; but by ordering quantity lots of a great many items, better prices and discounts can be secured and should be taken advantage of whenever possible.

I have known of cases where dealers in distributing centers have repeated orders for staple goods many times a month, the total amount aggregating more than a quantity lot which would secure a special discount. The bills for all these fractional quantities were payable on or before the 10th of the next month, hence there was nothing to be gained by ordering in these smaller quantities. The inference is that the stock was not carefully watched, and it is likely no stock-book was kept.

PROMPT SERVICE.

There is much to be said on the subject of delays in receiving goods, and I do not know that I can add anything to a circular which was recently distributed by a well known jobbing house covering this matter quite thoroughly. In case the members of this Association are not familiar with the circular in question I will repeat it here as a matter of possible interest:

DELAYS.

Fully realizing the importance of filling all orders without delay, it is our aim to forward the goods on the same day the order is received. When we fail, it is not through lack of effort on our part but is usually due to causes entirely beyond our control. Orders are frequently delayed in the mails, thereby reaching us too late to be shipped on the same day received. It is a common occurrence for orders to reach us a day late either through some oversight of the sender or the postal authorities.

Orders reaching us on a Sunday or holiday are necessarily held over, causing a delay of one day. Shipments forwarded promptly are often delayed in transit, and when the necessary proofs are furnished that such was the case we take the matter up with the transportation companies. They will neither investigate or pay any attention to a general complaint.

As the bulk of our mail reaches us after 9 o'clock a. m., the time allowed us for the shipping of goods is all too short. Unless an order is complete for loading by 3 o'clock we may fail to get the goods to freight depot in time for shipment that day. Railroads will not receive freight after 5 p. m. for shipment on same day.

Goods sent in our care from other houses are often late in reaching us, and in many instances we are forced to decide whether to forward our goods alone or hold the order over, awaiting the outside packages. In either case the customer is disappointed. We never omit the goods without making an effort to get them in, but it is not always possible to do so.

We are desirous of doing everything in our power to fill orders complete. Frequently articles are ordered that are entirely foreign to our line and hence are not carried in stock. We have a number of employees whose duty it is to buy such goods at the lowest market prices, but at times it is impossible to procure the items in time for shipment that day. In some cases we are compelled to omit the article entirely, but never without exhausting every effort to procure it.

Our stock is the most complete carried by jobbers in our line, but at times we may be temporarily out of an item which renders it necessary to purchase same from other dealers. We presume you sometimes get out of an article unexpectedly, though you may always endeavor to anticipate your wants.

The size of an order and the nature of the goods ordered sometimes make it impossible to ship on the same day received.

We submit the above as a few of the difficulties we are forced to contend with, and we are confident that no house in our line is better equipped for the rapid and careful execution of orders than we are. Our force is complete in every department and we are fully prepared to take care of any volume of business we may receive. Delays are never occasioned by an insufficiency of help as our force is increased in proportion as our business grows. We do not claim to be infallible, and through oversight the execution of an order may be delayed, but our system is so perfect that this chance is reduced to a minimum.

Errors are more apt to occur through haste in filling orders, and hence an order should not be "rushed" unless it is absolutely essential to do so. Many dealers are in the habit of marking their orders "hurry," "ship today" and similarly. When these notations appear on orders we endeavor, in every instance, to comply with the request, and with but few exceptions are successful.

However, sufficient time should be allowed to fill an order properly, hence it is not advisable to "rush" an order unless there is a reason for doing so. We primarily aim to supply our customers with the goods ordered rather than to hasten the goods out at the expense of accuracy and completeness. A shipment is never delayed unnecessarily, and we hope that our friends will not attribute their failure to receive goods promptly to any neglect on our part.

Conditions are almost identical with all the jobbers, and from the above you will realize that quite frequently there is a good reason why the wholesale druggist does not make a shipment as promptly as the customer expects. It would therefore be well to ascertain the reason before complaining, or what is better, anticipate your wants sufficiently far in advance to avoid the necessity of complaining on account of a day's delay.

WANT LIST.

In connection with a stock-book it is also necessary to keep a want list, and whenever goods are running low a memorandum should be made of the item.

If goods are entirely exhausted, the buyer's attention should be specially called to the item, to enable him to replenish the stock without delay. In the hurry and bustle of business the want list is frequently overlooked and stock not ordered. This brings about loss of sales, annoyance to customers and in many cases additional expense by the necessity of having the goods sent by express or mail.

Clerks should be cautioned in regard to entering items on the want list, as it is a very important detail in the ordering of goods. Quantities should be entered on want list when goods are ordered and the sheet retained to check up the goods when received in case invoice is delayed, unless a duplicate of the order is available. If the magnitude of a business admits of a stock-clerk as well as a buyer the danger of running out of goods is greatly reduced.

PURITY BEFORE PRICE.

While price is an important factor in buying, quality should always come first, and this is becoming more fully appreciated every year especially since the pure food agitation and since laws have been passed by many States bearing on this vital question. Too many buyers are guided to a great extent by price and fail to make a careful comparison of quality. The cheaper goods may prove the most expensive in the end, and therefore quality should always receive the first consideration.

All goods should meet the requirements of the United States Pharmacopœia, and I am sorry to say that in a great many instances such is not the case. This is particularly true with essential oils, chemicals, powdered drugs, pharmaceuticals and numerous items that the average buyer is unable to analyze thoroughly, due to lack of the proper facilities for making thorough analytical tests.

In proprietary medicines price is the prime consideration and instead of quality, quantity must be considered. On many items freight is allowed in quantity lots and this should be taken advantage of whenever possible. It is necessary for the buyer to have confidence in his source of supply, for without confidence he is apt to jump at conclusions. Reputable jobbing houses will not abuse the confidence of a customer, and while they are not always in a position to meet his views they are willing to investigate errors or irregularities that may occur in either filling or pricing orders. Their success and very existence depend upon their ability to give satisfactory service, hence every effort is put forth to serve the best interests of the trade.

While on the subject of price it may not be out of place to cite as an illustration, an instance where a dealer complained of the discount on bottles. A discount of 80 and 10 per cent. was allowed, and it was claimed that another firm (not a wholesale drug-house) quoted the bottles at 80, 10 and 5 per cent. discount from list. The list in question was submitted, and a careful examination demonstrated that list prices had been advanced to more than cover the additional 5 per cent. discount. While well-posted buyers would usually discover the deception it would escape notice of a great many.

CONTRACT GOODS.

A careful buyer will sign as many contracts as possible for staple goods as a matter of self-protection, because he is guaranteed against an advance on these contracts and protected in case of a decline. In other words he has everything to gain and nothing to lose by signing a contract with a reputable jobbing house. The jobber in turn is able to secure protection and other advantages by having these contracts, and thus the arrangement has always proved mutually satisfactory when both parties carry out their part of the agreement.

Dealers are sometimes prone to neglect their contracts and frequently ask for extensions, cancelations, etc., without being willing to pay the advanced price for reduced quantities. In some instances reasonable extensions are granted on contracts, but it is due to the fact that the jobber would be placed in an embarrassing position by a refusal. He does not care to offend a good customer by seemingly not being desirous of accommodating, and therefore contracts covering plainly specified periods are not always completed in accordance with the agreement.

Among the staple goods that can be contracted for are: Boric, carbolic, citric, hydrochloric, nitric, sulphuric, oxalic and tartaric acids, cocaine, peroxide of hydrogen, insect powder, morphine, potassium iodide, sodium bicarbonate, glycerin, ext. licorice, mothine, rock-candy syrup as well as numerous other important items for which the average retail druggist has a regular sale.

LEGIBILITY IN WRITING ORDERS.

Nearly every jobbing house furnishes order blanks of uniform size. If these blanks are used for open orders much time can be saved, and it will greatly facilitate the execution of the order. It will also prevent errors in recopying orders. They should be entered plainly and ditto marks avoided as much as possible. Orders thus sent in, reach the order department much quicker owing to the fact that they do not have to be copied; and time is an important factor.

Where a certain brand is wanted it should be plainly specified, otherwise it is optional with the jobber as to what brand to send. Where there is only a preference for a brand the word "preferred" can be added, as this will indicate to the jobber that if he is unable to furnish the brand specified another equally as good can be substituted. This applies particularly to goods that have only a limited sale, and where there is a likelihood of the jobber not having the particular brand wanted. If an item is ordered that is not known to the retail dealer or which he has reason to suppose is not generally carried in stock by the jobbing trade, he should secure all the information possible in regard to the manufacturer's name and address before ordering, and indicate whether he wants it ordered direct in case the jobber cannot furnish.

Frequently orders are received by the jobbing houses which are extremely difficult to fill owing to the fact that abbreviations are used, as for instance the abbreviation "sulph." is used for sulphite, sulphate, sulphide, etc. The same thing applies to the abbreviation "hypophos." and many others. Usually the jobber is able to interpret the orders properly, but in some instances he fails; and if abbreviations are used, trouble is likely to ensue.

Many proprietary medicines have similar names, and dealers sometimes fail to properly specify the sizes wanted. It has been the custom for the jobbing houses to send the *small* where no size is mentioned, but this does not apply in every case owing to the fact that with some goods the medium or large sizes are generally called for.

DISCOUNTS.

A good buyer will always endeavor to take advantage of cash discounts, which greatly exceeds the regular rate of interest ranging from 1 per cent. up to 6 per cent. and sometimes higher. How many dealers ever stop to figure what a discount of 1 per cent. for cash in 10 days means? I am taking the minimum discount which is generally recognized as applying on regular mixed purchases of drugs, chemicals and proprietary medicines, or goods that are sold on terms 30 days or 1 per cent. discount for cash in 10 days. It means that the jobber is willing to pay at the rate of about 18 per cent. per annum for the use of the money. Considering that banks will loan money on good security in reasonable amounts at from 6 to 8 per annum, it is apparent what can be gained by taking advantage of cash discounts.

The matter of discounts is a serious problem on account of the growing tendency of some manufacturers and jobbers to increase the discount on certain classes of goods, particularly druggists' sundries. The matter of discount, however, depends altogether upon the list prices charged, and a careful comparison of the various lists will convince the average dealer that quite frequently the jobber who allows a 3 per cent. cash discount on certain lines is really lower than the jobber who allows a discount of 6 per cent.

The terms, "cash in 10 days," means that it is necessary at times to remit for goods even before they are received, and this applies especially to dealers located in distant territory.

RESPONSIBILITY OF SHIPPERS.

A great many merchants are under the impression that they should not pay for goods until the goods have been received and checked up. This is incorrect because the responsibility of the shipper ceases the moment he receives a clear receipt from the transportation company who act as agents for the consignee. As far as the shipper is concerned the goods belong to the customer, and in case they fail to reach their destination in good order the consignee's only recourse is on the transportation company.

The jobbers are willing to assist, in every possible way, in establishing a claim for losses while goods are in transit, but legally cannot be held responsible for the safe delivery of the goods. In case there is a shortage in a shipment for which the jobber can trace his responsibility, the goods having been left out in the packing or omitted without being so marked, the matter can be adjusted even after the bill has been paid.

It is therefore important that remittances be made promptly and in accordance with the terms on invoice (unless the shortage is a large one), as a failure to receive same in due time leads to many unpleasant complications, and this applies particularly where the dealer wishes to take advantage of the cash discount. Remittance should be made in full, less whatever discount is allowed, and if a credit is due it will be rendered just as cheerfully by any reputable jobbing house as though the bill had not been paid.

It sometimes happens that jobbers are asked to allow discounts after bills have been matured. The jobber dislikes to offend a customer by a refusal, and at the same time does not feel that it is a correct business principle to make this concession after bills have become due, hence the situation is embarrassing and one that should not exist.

The request to omit or credit back interest charges on overdue accounts is also an annoying feature of the wholesale business. The jobber must pay his bills promptly in order to take advantage of cash discounts, and failure of customers to remit at maturity renders it necessary to secure the money from other sources paying interest thereon.

If these were of rare occurrence it would not prove a serious matter, but the average jobbing house is obliged at times to grant extensions to desirable trade, especially in certain sections of the country, during the summer months. The jobber must pay interest on money borrowed from the bank, hence his customers' failure to pay interest would mean a loss. I mention these things because a good buyer should take advantage of the benefits of cash discounts, and should not place himself under obligations by making unreasonable requests, or requests not in conformity with good business usages.

BUYING DIRECT.

The question has frequently been brought up in regard to the retailers buying proprietary goods direct on some advertising deal or special proposition. In many cases they are purchased in larger quantities than they would ordinarily be bought from a jobber. The jobber is often expected to relieve customers of goods so bought that have proven slow sellers and in some cases dead stock.

As a rule these goods can be purchased from various sources at a considerable discount from regular prices, and therefore when an offer is made, a customer is often disappointed and not unfrequently offended, believing that he is being taken advantage of.

Wholesale drug-houses, and I might state wholesale houses in every line, do not like to take back goods that have been on the shelves of the retailer, and for a good reason. If they are the least bit soiled they cannot be sent out; for what retailer would care to place soiled and shop-worn goods on his shelves?

If druggists making these requests could only place themselves in the position of the jobber they would realize that it is not a desirable thing to take back goods whether in the drug, chemical, patent-medicine or sundries line, that have been on the shelves for even a short time. While the imperfect condition of the goods may be almost imperceptible when returned, still when sent out with fresh goods of the same kind and placed side by side on the shelves with such stock the condition becomes very noticeable.

In a great many instances deductions are made for goods that have either been ordered improperly or have been sent in error. A jobber should not be asked to credit goods that have not been returned, and the matter should be left open until the items have either been returned direct or delivered to a representative of the house.

Goods should never be returned without first giving the jobber an opportunity to investigate the matter. If an error has been made in filling the order the jobber will authorize the disposition of the goods, and can frequently dispose of them to other dealers, thus saving return charges.

SPECIAL PRICES.

One of the dificulties which the average jobbing-house and traveling salesman is forced to contend with is special prices made by other firms either as "bait" or for other reasons best known to themselves. These prices are of course intended to influence trade, and should not be considered seriously. It is necessary for the jobber as well as the retailer to realize a legitimate margin of profit on sales, hence it is obvious that when a competitive house makes prices representing cost, or even below, it is done for a purpose. I do not mean that buyers should not take advantage of these offers, but they should not be a criterion for future transactions.

In a few isolated cases the buyers adopt the plan of stating to the salesmen that goods can be purchased at a less price, irrespective of what price he has named, and this applies particularly to buyers who do not keep well posted in regard to the market.

It does not take long for a salesman to size up the situation, and a buyer can gain little by adopting such tactics. It is therefore a matter for congratulation that the retail drug business does not contain many merchants of this caliber.

TRAVELING SALESMEN.

The traveling salesman's time is limited, as his route has been mapped out in advance, and it is necessary to visit a certain number of towns and customers on every trip. He should therefore not be burdened with collections, claims, etc., any more than necessary.

The traveling salesman dislikes to be classified as a "claim-hunter," and this is frequently the case when he is forced by his customers to write complaining letters to the house. He is unable to adjust many differences, not knowing the conditions or having the proper means of investigating, hence must necessarily refer the matter to the house before it can be investigated.

It would relieve the traveling salesman of a world of trouble if dealers would remit direct to the house, and also make claims direct, without waiting for the traveling salesman or burdening him with these details.

The salesman is naturally interested in serving his customers in the best possible manner, and in giving them the benefit of every advantage he may possess in the way of prices. His success depends upon the number of orders he secures, and his services should be worth a great deal to the trade he calls upon.

It is therefore apparent that it is to the interest of the dealer to gain the friendship and good-will of the traveling salesman ; and this he can best do by treating him courteously, even though he is not in a position to favor him with an order.

The dealer who keeps on the good side of the traveling representative receives a good many pointers that one less successful in this respect fails to secure. One of the most embarrassing positions a merchant places a traveling salesman in, is to request that he shall not call upon a competitor. As a matter of principle the traveling salesman is bound to call upon all desirable trade in this line, and his failure to do so would prove absolutely of no service to the objecting dealer.

There are so many sources of supply that an objection of this kind, if accepted by the traveling salesman, merely results to the latter's disadvantage without being of the least benefit to the customer. I am glad to say that these cases are becoming more rare every day, as the average retail druggist is a broad-minded and progressive business man, usually keeping on friendly terms with his competitors, and always sufficiently reasonable to be convinced whenever he assumes a false position.

CLAIMS.

Errors are bound to occur from time to time both against and in favor of the retailer. If the claim is a just one one it will be allowed by the jobber without delay, and this can usually be determined upon a careful investigation of the records.

Nearly every jobbing-house has a system for putting up, checking and packing goods, that enables it to tell almost to a certainty whether goods have been properly packed or not. Claims for shortages have been made by retail druggists in all sincerity when there was absolutely no question that the goods reached their destination. A second search either located the goods on the shelves, or it developed that they had been thrown out with the packing material.

It is therefore necessary to take great pains in the unpacking of goods, and to place the goods in a secure place before they are checked on the invoice. In some cases the shortage occurs after the goods reach the customer's premises, possibly through some dishonest person who pilfers them before they have been checked on the invoice. Claims for shortage also originate from the fact that the dealer does not always check the invoice immediately upon receipt of the goods, and in the interval some of the items are sold by clerks without any memorandum being made.

If goods are lost in transit and the loss is a concealed one, the claim can be established by the jobber furnishing an affidavit that the goods were properly packed, and the retailer furnishing an affidavit showing that the goods were not received.

A careful buyer will, therefore, exhaust every means of locating the goods before making a claim for shortage, and then if it develops that the shortage occurred while the goods were in transit he should furnish the necessary papers to have a claim filed in his behalf.

The question of claims for over-charges is also a serious one. Although there may be a number of items in the bill that have been priced below competitors' prices, if there is one item that is priced slightly higher the jobber is sure to hear of it—and yet under-charges are about in the same proportion as the over-charges—possibly much greater in some instances.

It therefore follows that individual items should not be picked out without a careful comparison of the whole bill. I do not wish to insinuate by this that dealers will take advantage of errors made in their favor, because frequently the jobber's attention is called to the matter. I am, however, stating a fact when I say that errors reported in favor of the jobber are out of proportion to those in favor of the dealer.

In the buying and selling of goods the obligations are mutual—the retailer must purchase his supplies, and the jobber who can supply his wants to the best advantage does him just as great a favor as he receives. Unless transactions can be made mutually pleasant there is little satisfaction in doing business, and it therefore follows that if a customer or buyer is dissatisfied with the treatment accorded him and finds it necessary to constantly complain in order to have his orders properly filled and priced, it would be to the benefit of all concerned to look for another source of supply.

DRUG PUBLICATIONS.

The up-to-date druggist should carefully peruse the various drug publications or trade journals containing the market changes ; and this not only applies to prices, but to the advertising and reading pages as well. There are a number of first-class drug journals published in this country that contain invaluable information to the progressive and up-to-date druggist.

To keep in touch with events of interest to the pharmaceutical profession it is necessary to take several or these publications. Many new remedies are advertised that are not familiar to the average dealer, and by carefully examining both the advertising and price-list pages he will become familiar with the goods. The drug journals certainly deserve the support of those engaged in the retail drug business as well as the manufacturers and jobbers who sell to the drug trade.

ASSOCIATIONS.

The dealer should also support his local, state and national associations, and the money expended will come back a thousandfold. The National Association of Retail Druggists has brought grand results to the drug trade by eliminating to a great extent the demoralization of prices which for a time threatened to disrupt the drug business and certainly made it unprofitable in some sections.

Manufacturers and jobbers have shown a desire to co-operate with the various associations to bring about a betterment of conditions. Some dealers do not seem to appreciate the importance of signing the various agreements, and the jobbers frequently offend customers by not supplying goods that are sold on the serial-number plan, owing to the fact that the dealer has omitted a very important condition.

The jobber is really benefited very little directly by the increased detail work necessitated by this plan, except that whatever is of benefit to the trade at large is naturally to his interest. Any plan that will better the condition of the retailer will prove of value to the jobber, their interests being mutual. It goes without saying that every progressive druggist, not already a member, should join the American Pharmaceutical Association without delay—the Association that stands for everything that is best in the pharmaceutical profession.

Concerning the various associations I wish to state that the wholesale druggists as a rule are thoroughly in accord with the objects of such organizations, and cheerfully contribute their share both in money and advertising, as is evidenced by a perusal of the various proceedings.

I will call particular attention to the "Salesman's Card" issued by some of the local associations. Without any desire to criticise the Card it appears to me that some of the so-called agreements therein are somewhat one-sided, and that the jobber's interests have not been carefully considered. An agreement to be binding should obligate both parties thereto, and it has been suggested that a clause could be inserted similar to the following:

"In consideration of the promises herein set forth the members of this Association hereby agree to purchase their supplies of such goods as the wholesale druggists carry in stock from them, everything being equal."

They are not expected to do so to their disadvantage in regard to prices, terms and quality; but the jobbers who co-operate with the local Associations by signing the aggreement before receiving the Salesman's Card should have the preference. If the jobbers are willing to protect the interests of the legitimate dealers, the latter should in turn give their business whenever possible to the jobbers.

In my opinion the careful and conscientious buyer (and this usually means the proprietor of a retail drug store), should adopt a few rules, and as an illustration, suggest the following:

Keep a complete stock-book.

Take advantage of a quantity whenever possible, especially on staples.

Order in ample time to avoid running-out of goods should there be a slight delay in transit.

Patronize the traveling salesman as much as possible, and have confidence in his representations.

Don't deal with a house unless you are fully convinced that it will not take advantage of whatever confidence you may repose in it, as this is one of the necessary requisites for mutually satisfactory business relations.

Make quality the prime consideration, and do not compare prices without comparing quality.

Take advantage of all cash discounts, and make your remittances whenever possible direct to the jobber in ample time to reach him before the expiration of the discount period.

Make claims immediately upon receipt of invoice, either in regard to prices, errors, or terms on which the goods were purchased.

If you are interested in the welfare of the salesman, don't burden him with collections and claims, as his success depends upon the amount of goods he sells.

Don't hold the jobber responsible for everything that goes wrong, irrespective of whether he is to blame or not.

Don't make an arbitrary claim and threaten to "stop buying" if it is not allowed.

Don't order items you are unfamiliar with that are not ordinarily carried in stock by wholesale druggists and then get mad because the order is not filled complete.

Try to make your business transactions agreeable to both parties, and show your jobber that you appreciate his efforts to serve you as much as he appreciates your patronage.

Select a source of supply where you can secure accuracy, completeness and just treatment.

Before writing a caustic letter of complaint to your jobber, place yourself in his position and try to think how you would feel if you would receive such a letter.

Don't fail to properly introduce yourself when opening an account with a house you have never dealt with, especially if you have only recently started in business and have no established credit rating.

Answer all business communications promptly, and extend the same courtesy in this respect to others that you exact from them.

Join your national, state and local associations, and encourage the officers by your attendance at the meetings.

Subscribe for at least several drug journals and keep fully posted on the market changes.

File all price-lists, catalogues and quotation sheets, where they can be quickly referred to.

In conclusion, I will state that every legitimate jobbing house in the country is desirous of serving its patrons to the very best advantage; and while some may have facilities not possessed by others, all are anxious to do their utmost to gain the approval of customers. This condition is not due to pure philanthropy, but is brought about by a realization of the fact that in order to increase their business and make a success of it they must serve the trade in a satisfactory manner.

I might go on indefinitely from a jobber's view-point in calling attention to various methods that could be employed advantageously by the retail druggist or buyer, but I feel that I have already taken entirely too much time with my remarks. The above is merely an outline of what retail dealers should do, from the view-point of one who has been engaged in the wholesale drug business, and conceding that there are two sides to every question. I have not touched upon what the wholesale druggist should do in return, but I am confident that the "buyers for a retail drug-store" can do justice to the other side of the subject.

MINUTES

OF THE

SECTION ON SCIENTIFIC PAPERS.

First Session—Thursday Morning, September 6, 1906.

The Section was called to order by Chairman Charles E. Caspari, of St. Louis, at 10:20 a. m., in the palm-room, on the top floor of the hotel.

The Chairman noted the absence of both his colleagues on the Committee, Messrs. Daniel Base, of Baltimore (Secretary), and H. V. Arny, of Cleveland, and requested Mr. M. I. Wilbert, of Philadelphia, to act as Secretary.

Mr. W. A. Puckner, of Chicago, was called to the Chair while Mr. Caspari read his address:

Gentlemen: The by-laws of the American Pharmaceutical Association provide that the Chairman of each Section shall make a short annual address upon some subject of interest to the Section and this address frequently assumes the form of a series of recommendations which are adopted by the Section, and that ends it. In fewer instances the Chairmen of this Section have elected to speak on some more or less scientific subject, which, it has been thought, would be of interest to the Section. It is eminently proper that the Chairman should make any recommendations which he may see fit, but it seems to me that in order for recommendations to be effective, they should emanate from the Section itself and not from its Chairman. Therefore, I have no recommendations to make.

Mr. Gane, last year, in his address as Chairman of this Section referred to the great advances which have been made in recent years by the application of physical methods to chemical research. This is notably true of the application of electricity to chemical synthesis. The use of the electric current in the manufacture of inorganic products is pretty generally known, but this is perhaps not true of its application in the manufacture of organic compounds. Great advances have been made in this direction in the last few years and I shall endeavor to describe briefly some of the results obtained.

It may not be out of place to recall to your attention some of the fundamental principles of electrolysis. Every aqueous solution will either conduct a current or it will not. A substance whose aqueous solution will conduct a current is called an electrolyte; all other substances are non-electrolytes. Absolutely pure water will not conduct a current, but the moment a small quantity of some acid, base or salt is dissolved in the water, the solution will conduct. Now, what is the explanation of this fact? It is assumed that whenever an acid, base or salt or any electrolyte is dissolved in water. the molecule of the electrolyte is dissociated, that is, it is split up into atoms or groups of atoms with positive and negative electric charges upon them, which are called ions. Thus, when sulphuric acid is dissolved in water, the acid is dissociated into two H ions and one SO_4 ion, the former being charged positively and the latter negatively, the amounts of the two charges being the same. Since pure water will not conduct a current and water containing an electrolyte in solution will, the property of conduction must depend on the presence of the ions. The electric current has nothing to do with decomposing the molecule of the electrolyte. The act of solution effects that dissociation and the electric current merely controls or directs the movement of the ions. As soon as sulphuric acid is dissolved in water, there are present H ions charged positively and SO_4 ions charged negatively. Now, when an electric current is passed through the solution, it causes all the H ions to move in the direction of the current to the negative pole or electrode, the cathode, while the SO_4 ions are driven to the positive pole or electrode, the anode, where the current enters the solution. As soon as a H ion reaches the cathode its electric charge is neutralized, the ion becomes an atom of hydrogen, the atoms of hydrogen form molecules of hydrogen and we see the gas escaping in bubbles from the cathode. The SO_4 ions, when they reach the anode, lose their electric charge and react with the water, thus $H_2O + SO_4 = H_2SO_4 + O$. The oxygen thus formed bubbles up at the anode as a gas, while the sulphuric acid formed is again dissociated and the process is repeated. So we see that the electrolysis of water or its decomposition into hydrogen and oxygen depends entirely upon the presence in the water of ions produced from some electrolyte. The case becomes more complicated if several electrolytes are present, when the different atoms liberated at the poles may react with each other or if some non-electrolyte is present which could be reduced by the hydrogen at the cathode or oxidized by the oxygen at the anode, these two gases being in the nascent state at the time.

Electrical energy may be employed in three different ways in organic chemistry, in electrolytic reactions, in electrothermic reactions, and in electric-discharge reactions. By electrolytic reactions are understood those in which the electric current acts directly in the decomposition of compounds which may or may not be electrolytes or conductors of electricity. Electrolytes are acids, bases or salts, and they themselves furnish the ions for the passage of the current, while if an organic compound is not an electrolyte, some other ions must be present for accomplishing the electrolysis. Usually some inorganic acid base or salt is used in solution for this purpose, though a similar organic compound will frequently answer just as well. In this case the passage of the current does not itself affect the organic electrolyte. It is only when the ions, driven to the electrodes discharge themselves that the role of the organic body begins. The carbon compound reacts with the discharged ions, and thus becomes a depolarizer, and it is then that the organic substance enters into chemical reaction. Depolarizers may be anodic, acting where the current enters the solution, or cathodic, acting where the current leaves the solution. The phenomena of electrolysis of organic compounds are therefore divided into two classes—primary reactions, where the compound is an electrolyte, forming ions, which re-arrange themselves, and secondary reactions, which are produced by depolarizers. The depolarizers are cathodic, in which case the reaction is always one of reduction, since the hydrogen ions and metallic ions are discharged at the cathode, and anodic, when they depolarize at the anode, in which case the reaction may be one of oxidation, or may be more complicated since the individual variety of the anions is so great.

In electrothermic reactions the electrical energy is converted into heat energy, and the increased temperature thus obtained accomplishes the chemical reaction. The conversion of the electrical energy into heat energy is effected by offering resistance to the passage of the current. Reactions under this head are usually carried out with gases or liquids in an apparatus under diminished pressure, and the reaction is usually induced by the passage of an electric spark or by wires or filaments heated to incandescence.

The third class of reactions, the electric-discharge reactions, is perhaps less well understood theoretically than either of the other classes. These reactions depend upon the silent or glow discharge of electricity, the same kind of discharge which is used in the preparation of ozone from oxygen, and in fact it is generally believed that the reactions produced by the silent discharge are primarily due to the formation of ozone, which being so much more active chemically than ordinary oxygen, causes the reaction to proceed.

Electric-discharge reactions always take place between gases, usually in a rarified condition, when they are accompanied by luminous appearances (glow discharges), which are frequently suited for investigations in spectrum analysis. The rise in temperature is so slight during such reactions that unstable or labile compounds are formed which could not exist at a higher temperature, and which are never formed during reactions produced by the spark from an induction coil.

Just how the electrical energy in these cases is consumed is unknown. It is supposed that the electric discharge which contains cathode and ultra-violet rays, introduces great quantities of kinetic energy into the system by the movement of electrons, and that then this kinetic energy is converted into chemical energy. In preparing ozone from oxygen under the most favorable conditions, only 15 per cent. of the total energy is utilized in the chemical reaction.

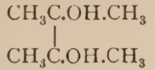
The results in all three classes of electrical reactions are influenced very materially by temperature, resistance, voltage and amperage of the current.

The reactions of electrolysis are up to the present time by far of most importance and several examples will illustrate the possibilities. In the electrolysis of the hydroxyl derivatives of the marsh gas series, oxidation products only are produced, hydrogen escaping at the cathode. Thus methyl alcohol in aqueous sulphuric acid solution yields methyl formate, methylal, methyl acetate, acetic acid, methylsulphuric acid, carbon monoxide and carbon dioxide. It has been possible, however, to electrolyze an aqueous sulphuric acid solution of methyl alcohol and obtain 80 per cent. of the current yield of formaldehyde, with only traces of formic acid and the two oxides of carbon. In this latter case certain conditions must be observed very carefully. While chloroform and bromoform cannot be obtained electrolytically from alcohol, iodoform can be very readily obtained in a yield of about 70 per cent. Calcined soda, potassium iodide, water and alcohol are placed in a porous cup with a platinum anode and a cathode of nickel is immersed in a strong solution of sodium hydroxide. The reaction is expressed by the equation $CH_3CH_2OH+10I+H_2O=CHI_3+CO_2+7HI$.

Chloral may be obtained, if alcohol is allowed to flow into the anode chamber of a cell during the electrolysis of a solution of potassium chloride. The nascent chlorine liberated at the anode acts on the alcohol producing chloral.

In the electrolysis of a dilute sulphuric acid solution of glycerin, there were obtained besides oxygen, hydrogen, carbon monoxide and carbon dioxide, trioxymethylene, formic acid, acetic acid, glyceric aldehyde, and a substance closely related to glucose, while in the electrolysis of an alkaline solution of glycerin there were obtained acrolein, acrylic acid, glyceric aldehyde, glyceric acid, graphitic acid, formic acid and propionic acid Glycerin illustrates well how deep-seated electrolytic decomposition may be and how varied its products may be.

Acetone is an interesting example as from it by electrolysis under different conditions may be obtained acetic acid, formic acid, mono- and dichloracetone, monobromacetone, isopropyl alcohol, pinacone, chloroform, bromoform and iodoform. If a sulphuric acid solution of acetone is electrolyzed, carbon dioxide, formic and acetic acids are obtained.

In an acid or alkaline solution using a lead cathode, acetone is reduced to isopropyl alcohol and pinacone, thus $CH_3COCH_3 + 2H = CH_3CH.OH.CH_3$ and $2CH_3COCH_3 + 2H =$  $\begin{array}{c} CH_3C.OH.CH_3 \\ | \\ CH_3C.OH.CH_3 \end{array}$ Merck has taken out a patent on this process. By electrolyzing a concentrated hydrochloric or hydrobromic acid solution of acetone, mono- and dichlor- and monobromacetone are obtained. Chloroform may be obtained from acetone by electrolyzing a solution of sodium chloride in the presence of acetone under conditions that would continuously give the greatest yield of hypochlorite. Bromoform may be made quantitatively by subjecting acetone and potassium bromide in aqueous solution to electrolysis. By substituting potassium iodide for the bromide, an almost theoretical yield of iodoform may be obtained. It is only necessary to neutralize the potassium hydroxide as fast as it is formed.

Chloral hydrate yielded upon electrolysis chlorine at the anode and acetaldehyde at the cathode, a diaphragm being used.

The aromatic series of compounds affords many illustrations of electrolysis. Thus if a mixture of benzene and sulphuric acid is electrolyzed using lead peroxide anodes and lead cathodes, quinone is first produced at the anode and is then reduced to hydroquinone at the cathode. This example is especially interesting as oxygen is introduced directly into the benzene nucleus.

Of all the organic compounds which have been tested electrolytically, the aromatic nitro compounds have received the most accurate treatment and are most important, because, being easily reducible, the reaction takes place only at the cathode and because the nitro group can develope so many reduction phases, depending on the conditions of the experiment. It is possible to pass from nitrobenzene to nitrosobenzene to phenylhydroxylamine to aniline with azoxybenzene, azobenzene and hydrazobenzene as intermediate products. The quantity of each product formed will depend upon the nature of the electrolyte, the cathode material and the current conditions.

Another interesting example is thymol, which in alkaline solution with potassium iodide yields by electrolysis dithymoldiiodide or aristol. In a similar manner the iodides of beta-naphthol, phenol, resorcin, salicylic acid, cresotinic acid, carvacrol, etc., may be obtained.

These illustrations of the electrolysis of organic compounds might be multiplied much further, but time does not permit. Electrothermic and electric discharge reactions have not been studied as closely and are not as important as the reactions of electrolysis and a very few illustrations of each will suffice. Thus, induction sparks decompose methane into carbon and hydrogen and act upon gaseous mixtures of oxygen and alcohol, of hydrogen and carbon dioxide, of methane and carbon dioxide to form formic and acetic acids.

Under the influence of the silent electric discharge, carbon dioxide and water yield formic acid and oxygen which becomes ozonized and produces hydrogen peroxide. Berthelot has found that the silent electric discharge causes carbon monoxide and carbon dioxide to condense with an excess of hydrogen to form carbohydrates. In general the action of the silent discharge upon hydrocarbons, alcohols, etc., is to decompose them into simple gases.

It has of course been impossible in this brief review to touch on all the phases of the electro-chemistry of organic compounds and I have selected only what seemed to me to be the most striking illustrations, but I think that no one can fail to be impressed with the tremendous field which is opened up for research and which will prove not merely interesting but remunerative.

Before concluding, I desire to express my thanks to the other officers of the section and my appreciation of their hearty co-operation in the work of the past year.

The Address of the Chairman was applauded, and on motion of Mr. O. F. Claus, seconded by Mr. H. A. B. Dunning, was ordered received and referred for publication.

Mr. Caspari resumed the chair and called for reports from committees, designating the Committee on Ebert Prize as the first to make report. Mr. Puckner made report for the committee as follows:

REPORT OF COMMITTEE ON EBERT PRIZE.

It is stipulated by the donor that the Ebert Prize is to be awarded for the best contribution concerning *an original investigation of a medicinal substance*, determining new properties, or containing other meritorious contribution to knowledge; or for *improved methods* of determined merit for the preparation of chemical or pharmacal products. This excluded from our consideration the report of Schaer, of the University of Strassburg, of the vast amount of work done in investigating the influences of alkaline substances on oxidation processes, and also the contribution of Kebler and Hoover on the analysis of emulsions, a paper of much practical value to pharmacy.

In 1904 the Committee appointed to award this prize recommended to the consideration of future committees a contribution to the chemistry of chelidonine by J. O. Schlotterbeck and H. C. Watkins. Your Committee believes that the further contribution to the chemistry of this interesting body by J. O. Schlotterbeck, merits the recognition of this Section, and, therefore, recommends that the Ebert Prize be awarded to the authors of the paper: "Contribution to the Chemistry of Chelidonine."

Respectfully submitted,
W. A. Puckner,
C. S. N. Hallberg,
A. B. Lyons.

On motion of Mr. Coblentz, seconded by Mr. Claus, the report was received and adopted.

The Chair called for report of the Committee on Drug Adulteration, stating that this committee was made a standing committee last year, by virtue of a recommendation of Chairman Gane, of this Section, and stated that in the absence of Mr. Patch, Chairman, Mr. Kebler would present the report, which he did in abstract, the report being too long to be read in full. The text of the report here follows:

REPORT OF THE COMMITTEE ON DRUG ADULTERATIONS.

Personally, your chairman has objected to the above caption, much preferring the old title of Committee on the Drug Market. Adulteration as such, with intent, is quite rare; deficiency in strength, accidental variation from standard and deterioration are more common. It creates a wrong and unfavorable impression in the public mind to have each slight impairment or deficiency, or wrong labelling, advertised as an adulteration. I am aware that the pure food laws, including the National Law, so rule and declare adulteration to include error in labelling, whether accidental or intentional, deterioration and impairment; but the Committee on Publicity should embrace every opportunity in conjunction with the proper committee of the N. A. R. D. to educate the public to the true facts in the case. The adoption of the last edition of both the U. S. P. and National Formulary as legal standards will greatly enlarge the possibility of technical adulteration, for after exercising all care possible innumerable occasions will arise where an over-zealous, prejudiced or injudicious official can cause serious harm to pharmacy and pharmacists.

There are many cases where such an official might argue upon the absolute inviolability of the text and some cases where the analyst would not be experienced enough in the standard method to be a reliable witness for the prosecution. A very few illustrations out of many that occur to your committee may not be out of place.

Glycerite of the phosphates of iron, quinine and strychnine is assumed to be a liquid by the U. S. P. We have yet to find a sample that remains liquid. It has been repeatedly made with the use of market products which carefully tested met the U. S. P. requirements, and has been made with freshly prepared soluble ferric phosphate U. S. P. and an equivalent of freshly prepared monohydrated quinine. On standing all solidify. Only a slight increase of temperature is required to linquefy it, but every lot of solid sold, made with the exact ingredients, differs in appearance from the officially described product and would be classed as an adulteration.

The formula for the syrup of phosphates of iron, quinine and strychnine calls for the mixture of one volume of this glycerite and three volumes of syrup. In the directions to "mix and strain if necessary" we have an intimation that something may be strained out. If the glycerite is freshly made and before it solidifies is mixed with the syrup, on standing a short time there is a decided precipitate in the syrup and if the pharmacist strained it, as he might assume he should by the U. S. P. directions, the product would be impaired in strength enough to make another adulteration.

It is possible that the pharmacist does not note that the soluble ferric phosphate is the sodium salt of U. S. P. 7th revision and not the ammonium salt frequently sold as U. S. P. Should he use the latter and secure a more permanent product the discovery of ammonia in the product brands it as adulterated.

The quinine called for is the trihydrated alkaloid. Market salts may contain from 12 to 22 per cent. excess of water and should the pharmacist not estimate the relation of his purchase to the U. S. P. standard his glycerite would not yield the full amount of alkaloid and be branded as adulterated.

A physician prescribes suppositoria glycerini U. S. P.

What will he get? How much are they to weigh?

The standard size of rectal suppositories is about 2 Gm. One would conclude that the material ordered made into ten suppositories would weigh about 2 Gm. A good object lesson is to give this formula to ten different operators and note results, giving to each man the same material all previously tested and found to be U. S. P. in quality. They read—"heat the mixture carefully until CO_2 ceases to be evolved and the liquid is clear." One decides that 15 minutes meets these requirements; others prolong the heating: Giving each 1125 Gm. of material to make 300 suppositories by the different degrees of heating and methods of manipulation, the mass shrinks anywhere from 125 to 400 Gm. in weight and the products all vary in density and opacity. Poured into a mould that makes a cacao butter suppository weighing about 2 Gm. the glycerin suppositories weigh about 2.7 Gm. Which of these ten products must be used to pronounce all the others adulterations?

Submit a sample of belladonna leaf to five men for assay by the U. S. P. 1900 process and try to harmonize the results. You learn that in using hematoxylin indicator it makes a difference whether a fresh or old solution is used. Using this or iodeosin, the carefulness in reading the reaction varies. If this variation is to be impressed on our attention it might be well to authorize our Scientific Section to send samples of the same belladonna leaf and of the same lot of fluidextract of hyoscyamus to the various State Boards and the Drug Laboratory at Washington, after first having them assayed by each individual member of the sub-committee of the U. S. P. Committee on Revision.

Tincture of arnica is now to be made by the crude method of maceration and expression with no alternative. Is it an adulteration if made by percolation and thoroughly exhausted? What is the standard? If the drug varies in yielding from 15 to 25 per cent. extract to diluted alcohol, how shall we determine whether the products are correct. without examining each lot of drug used? 229 samples were examined by the New York Committee of Adulteraton and 9 found deficient. What was their standard? In view of the wide variation of drugs in extractive, determined by locality, character of season, time collected, percentage of moisture present, etc., can we establish a practical standard? We know that the percentage of alkaloid in alkaloidal drugs bears no relation to extractive. A drug high in extractive may be low in alkaloid and one high in alkaloid low in extractive. May it not be true that a non-alkaloidal drug low in extractive may be much more active than one high in extractive? May not the proportion of inert soluble starches, sugars, coloring principles, salts, etc., be preponderating in some samples?

What is the pharmacist to do with petrolatum? The Standard Oil Company states that it does not make a product that will meet the sulphuric acid test. Only the water-white Russian product meets this test and we have not found a sample of this product of U. S. P. melting-point.

There is much variance of opinion as to the relative value of the light-colored para copaiba and the darker C. A. varieties. Some physicians insist on having the para dispensed. Twenty-three samples from different sources ranged in resin from 30 to 48 per cent. and all met all other U. S. P. tests. The U. S. P. requires 50 per cent. resin Must we conclude that every pharmacist dispensing para copaiba is an adulterator liable to $500.00 fine and one year's imprisonment?

E. H. Gane reports a lot of para copaiba testing as pure by all tests, but yielding only 16 per cent. of resin, hard, brittle and having all the properties of genuine copaiba resin.

Many retail pharmacists have been arrested, fined, branded as adulterators and their business injured for supplying distilled water below the standard. Under the U. S. P., 1890, it was adulterated if it gave any residue. By the U. S. P., 1900, it may have 0.075 residue per liter and not be adulterated. If the water supply of any city or town does not meet the requirements of the U. S. P. under "aqua," must the pharmacist use distilled water *only* in all cases?

Your Committee believe the enactment of the pure food and drug laws should prove very beneficial to the public, the pharmacist and the physician. It has been a great annoyance for the pharmacist and physician and a direct injury to the public to have such a wide variation in products under the same name.

For thirty years the menstruum for fluidextract of cimicifuga has been strong alcohol. As supplied by various manufacturing houses it has ranged from 50 per cent. to 91 per cent. and in some cases contained glycerin. A physician prescribes oil of gaultheria in fluidextract of cimicifuga and expects the proportion he orders will dissolve in the 91 per cent. alcohol to a clear solution, and it should. The pharmacist dispenses a product with a 50 per cent. menstruum and possibly glycerin, and the oil settles at the bottom of the bottle, or is imperfectly suspended, dependent upon the proportion of alcohol and glycerin.

The market fluidextracts of viburnum prunifolium range from 20 per cent. to 60 per cent. Fluidextract of aromatic powder from 46 per cent. to 91 per cent. A druggist purchases a 46 per cent. product from one maker, adds it to a 91 per cent. product from another and spoils both by precipitation. He is as liable to blame the 91 per cent. man for the fault as the 46 per cent. man.

Sixty per cent. of the fluidextracts from one source contained glycerin, although it is well known that it had no solvent value in the majority of cases. It replaced alcohol, gave products of greater density, gave larger and misleading amounts of extractive by evaporation and pleased many buyers. Under the new law all this will be stopped. If a fluidextract or elixir contains a proportion of alcohol varying from the U. S. P. or National Formulary standard and, being manufactured after January 1st, 1907, does not have this variation stated on the label, the manufacturer is liable.

All this legislation is along the lines of a higher civilization and a greater public safety, but means should be adopted to prevent injustice to the pharmacist through thoughtless, arbitrary or finical interpretation of the law. Those having the matter in hand should realize that there are limits of variation uncontrollable by the pharmacist. To illustrate in the case of a fluidextract:

"A" purchases a percolation drug that, when he uses it, contains 15 per cent. of mechanical moisture, and the drug yields 25 per cent. of extractive. He uses a 91 per cent. alcohol. His finished product yields 54.6 per cent. alcohol by distillation.

"B" purchases a drug of the same name, stores it in a dry location, and when he percolates, the drug has 5 per cent. of water, and gives 15 per cent. of extractive. He uses 91 per cent alcohol. His product yields 72.8 per cent. alcohol by distillation.

Which of the two is the adulterator?

The published report of the New York City Health Department condemns aconite root for varying in extractive contents from 28 per cent. to 34½ per cent. What menstruum did they use? The U. S. P. 1890 menstruum was 91 per cent. for the extract, and about 65 per cent. weight strength for fluidextract. We believe the majority of investigators would give the range for 91 per cent. alcoholic extractive from 11 to 15 per cent., and of 65 per cent. alcoholic extractive from 18 to 25 per cent.

When fluidextractum convallariæ is ordered, what shall the pharmacist dispense? Under this title the U. S. P. calls for a preparation from the rhizome and roots, with a 55 per cent. weight menstruum; the National Formulary one made from flowers with diluted alcohol. Both authorities are recognized. Must he follow the medicine-chest scheme and mix them?

Manufacturers who have made these products for years by formulæ other than now recognized in the standard authorities adopted, have educated their patrons to their use as made, and will probably continue the use of many of their own standard formulas, but the necessity of showing on the label how the products differ from the official standards should save many annoyances to the buyer and enable him to avoid transgression of the laws in many cases. The manufacturer cannot control his goods after they leave his premises. We have known a product made with 16 per cent. weight alcohol to be placed in the window by a pharmacist. The alcohol expanded, loosened the corks and allowed the alcohol to evaporate. Some time later examination demonstrated that all but one per cent. of the alcohol had evaporated and the product had spoiled. It was sent from a large lot made, and all the rest of the lot was satisfactory, yet, the manufacturer might be held for improperly labeling, while he was truthful and innocent.

As adulteration is interpreted, there have been marks of improvement in some localities during the past year. The New York Board of Health report that samples examined in 1904 were 12.63 per cent. deficient, and wood alcohol was used in 5.51 per cent. of the cases examined. In 1905 there were 2,655 samples examined, of which 10.74 per cent. were deficient, and 2.97 employed wood alcohol.

We append the detailed report of our year's work, which not only gives a few cases of adulteration, but also gives much data upon the condition of the drug market.

Mr. Gane, of the Committee, approved the introductory as presented by the Chairman, and suggested in addition that arrangements be made to test from time to time, over a long interval, standard samples of the assayed alkaloidal preparations of the U. S. P. to learn what impairment they are subject to.

Also that solution of nitroglycerin, 1 per cent., and the ordinary tablets into which it enters, be assayed from time to time over a long interval to determine their impairment.

He also recommended that this Committee, through the Association, make an effort to discourage the use of powd. extract of cannabis indica, as it is usually practically inert.

Mr. Kebler, of the Committee, did not wish to endorse all the subject-matter of the Chairman's introductory. He takes exception to the statement that "adulteration as such, with intent, is rare," citing the fact that 125 instances given by the report do not sustain this claim; while the Chairman is of the opinion that the 125 instances bear a very small ratio to the vast amount of material sold and dispensed.

He does not endorse the expression "over-zealous, prejudiced or injudicious officials," nor the suggestion that "means should be adopted to prevent injustice to the pharmacist through thoughtless, arbitrary or finical interpretations of the law," considering them as in a measure reflecting upon the workings of the Bureau of Chemistry, while the Chairman in using these expressions was taking the broad view of the whole field of adulteration as handled by State and City Boards of Health, and by committees of various medical and pharmaceutical associations.

He believes accidental wrong labelling is rare. The Chairman believes the pharmacist frequently labels products as conforming to certain standards, because the seller sold them to him as such, while he, the pharmacist, has not examined them to know that they are deficient. Hundreds of samples of flaxseed meal bearing the U. S. P. title are deficient in oil, and the pharmacist is not aware of it. He purchases Hoffman's anodyne as U. S. P., when it bears no resemblance to it by proper tests, yet he honestly puts on the product the U. S. P. title.

Dr. Rusby dissents from the six introductory lines of the report and comments as follows:

"A large minority of American pharmaceutical manufacturers, including some of the largest, make no provision for ascertaining the alkaloidal strength of the drugs which they employ, or of the preparations after they are made. Most of the others do so in so fragmentary and careless a way that they cannot truly claim to attempt to meet the official requirements. Of these two classes, a majority purchase the cheaper drug, closing their eyes to the fact that the price conditions render it highly improbable that the drugs so bought are of standard quality. The fact is established by the uniform experience of drug dealers that they have difficulty in finding a market for their better grades of goods. Moreover, this is so well known as to be notorious.

In defense of these manufacturers it can be truly said that the following two reasons determine their course. First, the results of pharmaceutical assaying are irregular and uncertain, as set forth by the Chairman, to a degree that is discouraging. Second, there has been no serious attempt to check the degrading competition of those few who systematically pursue a course of fraud.

I have personal knowledge of cases where very large and reputable manufacturers habitually employ spurious drugs for such preparations as those of strophanthus, belladonna, henbane, conium, ipecac and jaborandi. To discuss whether this is done intentionally is not pertinent. Of powdered drugs and spices, that is, spices handled as drugs and getting into the retail pharmacy, fully a third are intentionally adulterated or seriously degraded by systematic formulæ. For this purpose they employ foreign substances, marcs, or portions of drugs rejected by the better manufacturers, that is, garblings.

In my opinion the causes of the deplorable uncertainty in pharmaceutical assaying are not irremovable, nor more than temporarily serious. If they were, the practice of chemistry should be discontinued as fruitless. As a matter of fact, the most important lines of drug commerce are established and conducted on the basis of such assaying, and with the greatest success. I refer to cinchona and opium, where the entire commerce rests in assays, from plantation to manufacturer. It is only between the manufacturer and the patient that the baby act has to be pleaded.

But I do not deny a justification for this plea, at present. The chief responsibility rests with the institutions which profess to teach pharmaceutical chemistry. Many of these have been conducted on a system quite as dishonest as anything that has existed in commerce. The market has been flooded with spurious pharmaceutical chemists. Reform in this direction in the United States is now most active.

If the new pure food and drug law is enforced with sudden and undue severity, or in any way except one in which the administrators of the law become the zealous *helpers* of those who are to obey it, the results will be confusing. Every sign that we can see points to the most cautious, conservative and intelligent administration; but let us not start out by denying or minimizing the necessity for improvement."

Acetone.

Ninety per cent. pure. Not easily obtained. Nearly all in the market yields 20 to 45 per cent., distilling above 56.5° centigrade. J. M. Francis.

Acid Chromic.

Samples contained sulphuric acid and were not wholly soluble. E. L. Patch.

Acid Citric and Tartaric Acid.

Assayed full percentage of purity, but contained traces of iron and sulphate. Three barrels were rejected on account of containing lead. In the test for citric acid the strength of solution, the amount of barium chloride test-solution and the time limit are specified. In the test for tartaric acid the strength of the solution, ten times that of citric acid, is stated, but the amount of barium chloride solution and the time limit are omitted.

Acid Phosphoric.

American make contains in different lots phosphates and sulphuric acid. E. L. Patch.

Others an excess of silica. Cloudy with small gelatinous precipitate. E. H. Gane.

Aconite Root.

By U. S. P., 1900, assayed: 0.58 per cent., 0.56 per cent., 0.62 per cent., 0.58 per cent., 0.45 per cent. E. L. Patch.

0.20 per cent, 0.45 per cent., 0.65 per cent. E. H. Gane.

Aconite Leaf.

Assayed from 0.32 per cent. to 0.38 per cent. C. E. Vanderkleed.

Aloins.

The product generally used will not answer the U. S. P. description. Fusing-point is from 130° to 142° centigrade, and not 147°. It is not as soluble in water or alcohol as is stated. J. M. Francis.

Allspice.

81 samples examined. 7 contaminated, 3 adulterated with pea meal, bean meal, shell and mustard hulls. 5th Report Ill. Com.

Alum.

One sample contained a large amount of talc. C. E. Vanderkleed.

Ammonium Bromide.

96.4 per cent., 98.5 per cent., 99 per cent., 98.5 per cent. E. H. Gane.

Ammonium Chloride. Purified, Powdered.

Contains 49.75 per cent. Am. Cl., 44.46 per cent. NaCl, 3.52 per cent. Na_2SO_4, 1.55 per cent. $CaSO_4$, 0.09 per cent. Fe_2O_3. Balance water. R. & H. E. L. Patch.

Ammonium Carbonate, C. P.

U. S. P. standard 97 per cent., 65.33 per cent., 67.42 per cent., 77.3 per cent., 92.67 per cent., 96 per cent., 98 per cent., 98.25 per cent., 98.77 per cent.

Ammonium Carbonate Commercial.

94.59 per cent., 97.93 per cent., 94.6 per cent. E. L. Patch.

Amyl Nitrite.

Much that is on the market is inferior. J. M. Francis.

Apocynum.

A spurious root is substituted for the genuine. It has a circle of stone cells in the bark near the cambium. H. Kraemer. Wheat flour added. H. H. Rusby.

Tincture Arnica.

229 samples examined. 9 deficient. N. Y. Com. of Adulteration.

Aspidium.

One or more species of Osmunda. H. Kraemer.

Asafoetida.

8 samples of powdered ranged from 14.52 per cent. to 33 per cent. None were 50 per cent. as required by the U. S. P. Pa. Ph. Asso.

Powdered drug, 38 per cent., 30.8 per cent., 20 per cent., 35 per cent., 23.5 per cent., 38 per cent., 33.5 per cent., 20.3 per cent.

Whole drug, 61 per cent., 70.7 per cent., 56.5 per cent. E. L. Patch.

Barium Dioxide.

84.8 per cent. with some chloride.

77.2 per cent. chloride and nitrate. An inferior product.

90 per cent. traces of chloride and nitrate.

88.8 per cent. traces of chloride and nitrate.

89 per cent. traces of chloride and nitrate. E. L. Patch.

Bay Rum.

76 samples examined. 11 deficient. N. Y. Com. on Adulteration.

Beeswax.

20 per cent. adulterated with ceresin. Some even contain water-soluble coloring matter. J. M. Francis.

Frequently adulterated with paraffin. Much of the white is mainly paraffin. E. H. Gane.

Belladonna Leaf.

0.35 per cent., 0.212 per cent., 0.14 per cent., 0.069 per cent. Health Dept. New York City.

0.4 per cent., 0.33 per cent., 0.4 per cent., 0.36 per cent., 0.4 per cent., 0.27 per cent., 0.4 per cent., 0.25 per cent., 0.4 per cent. E. L. Patch.

Of 33 lots representing 38,648 pounds the average assay was 0.31 per cent.

8 were above 0.35 per cent., 0.4 per cent. 25 were below. The poorest was 0.23 per cent.

Of 15 bales 15 per cent. to 20 per cent. was scopola leaf. The pharmacopœia recognizes the dried leaf. The commercial drug is often whole plant tops and branches. J. M. Francis.

5 lots averaged 0.481 per cent. All were higher than the standard of 0.35 per cent. C. E. Vanderkleed.

Belladonna Root.

0.39 per. cent., 0.4 per cent., 0.263 per cent., 0.356 per cent., 0.41 per cent., 0.358 per cent., 0.325 per cent., 0.429 per cent. New York City Health Dept.

0.64 per cent., 0.53 per. cent, 0.545 per cent. E. L. Patch.

Several bales of poke root were sold as belladonna root. J. M. Francis.

8 lots averaged 0.545 per cent., only 3 were below the 0.5 per cent. standard. C. E. Vanderkleed.

Benzoin, Tincture.

135 samples were examined and only 4 found deficient. N. Y. Com. of Adulteration.

Benzoin.

The U. S. P. requires it to be almost wholly soluble in 5 parts of warm alcohol. Of 60 cases 2 gave 90 per cent. of soluble matter; 7 between 80 per cent. and 90 per cent; 10 between 70 and 80 per cent. The lowest 38 per cent. The average was 80.4 per cent, J. M. Francis.

Calcium Hypophosphite.

Large excess of sulphate. E. L. Patch.

Calcium Phosphate Ppt.

4 lots—iron and excess of chloride. E. L. Patch.

Calomel.

Tablets of calomel and bicarbonate of sodium become grayish in from one to six weeks made from the various makes of American, English and Japanese calomel. Only one make remained white. J. M. Francis.

50 per cent of all market samples contain bichloride. Pa. Ph. Asso.

Spirit of Camphor.

275 samples examined. 5 contained wood alcohol, 5 wood alcohol and deficient in strength, 14 deficient in strength. N. Y. Com. of Adulteration.

Camphorated Oil.

414 samples examined. 61 deficient. N. Y. Com. of Adulteration.

Cannabis Indica.

7.26 per cent. resin, 12.1 per cent. resin, 11.8 per cent. resin, 8.2 per cent. resin, 11.87 per cent. resin, 12 per cent. resin. E. L. Patch.

A drug answering the official description is not on the market. H. Kraemer.

Wheat starch added. Some contains a very large quantity of ripe seeds. Drug mouldy and decayed.

Mexican-grown cannabis indica giving 11.1 per cent. of resin has been offered but it is only one-fourth as active as the true East Indian drug. C. E. Vanderkleed.

Russian Cantharides.

0.55 per cent. cantharidin. 0.8 per cent., 0.56 per cent., 0.4 per cent., 0.45 per cent., 0.72 per cent., 0.66 per cent. E. L. Patch.

Capsicum.

Sample of powdered drug was adulterated and artificially colored. Yielded but 14 per cent. to alcohol. E. L. Patch.

Liquid Petrolatum.

Hard to obtain of the official standard of sp. gr. This is 0.870 to 0.940. Samples of water-white at 25° centigrade had a gravity of 0.856, 0.8664, 0.8606. These products all stood the sulphuric acid test of the pharmacopœia. E. L. Patch.

Sp. gr. limits 0.87 to 0.94 are too high. Sp. gr. 0.86 is best for use in inhalers and nebulizers. The Russian is water-white, while the American has a blue fluorescence. The American has more body and is preferred by some. J. M. Francis.

Willow Charcoal.

Not completely carbonized. E. L. Patch.

Chloroform Liniment.

293 samples examined; 24 deficient. N. Y. Com. on Adulteration.

Powdered Cinnamon or Cassia.

85 samples examined; 3 contaminated, 5 adulterated with oil stone, flour, wheat starch, sand, bean meal. 5th Report of Ill. Food Com.

Powdered cassia has been offered from which the oil has been distilled. H. H. Rusby.

The official is substituted by fagot or Batavia cinnamon. Henry Kraemer.

Cloves.

84 samples examined; 4 inferior, 23 contaminated, 24 adulterated. Clove stems, cassia, ginger, sand, starch, flour, pepper shell and allspice were the admixtures. 5th Report of Ill. Food Com.

Clove stems are sold for cloves. H. H. Rusby.

Cochineal.

Neither the silver nor the black in the market are of the official standard. Pharmacopœia recognizes but 6 per cent. of ash. Different samples gave 29 per cent., 29 per cent., 17.5 per cent., 25 per cent. of ash. Only one lot was found in the country that met the present requirements. This had 5.5 per cent. of ash. One investigator in Philadelphia states that he was obliged to import direct from London to get any that would meet the pharmacopœial requirements. E. L. Patch.

Coca.

15 lots of Huanuco coca assayed from 0.43 per cent. to 0.32 per cent. 6 lots of Truxillo coca: 0.61 per cent., 0.73 per cent., 0.78 per cent., 0.83 per cent., 0.46 per cent., 0.77 per cent. Average 0.69 per cent.

Huanuco has the best aroma and contains more cocaine and less isotropyl-cocaine. J. M. Francis.

Colchicum Root.

17 lots assayed from 0.2 per cent. to 0.4 per cent. They averaged 0.35 per cent., or U. S. P. 4 lots were below this standard. J. M. Francis.

Colchicum Seed.

11 lots assayed from 0.5 per cent. to 0.9 per cent., average 0.6 per cent. 4 were below the U. S. P. standard of 0.55 per cent. J. M. Francis.

Colchicine.

3 lots contained only 63 per cent., 63.6 per cent., and 66.7 per cent. pure alkaloid, although labeled pure colchicine, and obtained from a prominent manufacturer. J. M. Francis.

Colocynth Pulp.

Yielded to dilute alcohol, 49.6 per cent., 46.5 per cent. extractive. E. L. Patch.

100 lbs. of drug yields 30 lbs. of pulp, 10½ lbs. of extract. If the seeds are extracted with benzin to remove oil; dried, extracted with 75 per cent. alcohol, the extract is almost as active as the U. S. P. product. J. M. Francis.

Centaury, American.

Mixed with deergrass. E. H. Gane.

Conium Fruit.

Average 0.2 per cent. coniine. E. H. Gane.

Leaves substituted. H. H. Rusby.

Copaiba.

Still frequently adulterated with gurjun balsam. Almost the exception to find pure article. E. H. Gane.

10 samples of para copaiba yielded 31 per cent. to 48 per cent. resin. Average 40 per cent. E. L. Patch.

Samples of Central American yielded from 50 per cent. to 56 per cent. of resin.

One sample contained common resin.

5 samples contained fixed oil or gurjun balsam. E. L. Patch.

6 samples examined, one contained gurjun balsam. Pa. Ph. Assoc.

Sp. gr. ranges from 0.924 to 0.938 in light varieties, while the products answer all other tests. Inexperienced men may condemn pure copaiba as containing gurjun balsam by U. S. P. test. J. M. Francis.

Cream of Tartar.

45 samples examined. 30 were pure, 15 were impure, 1 contained alum, 3 were mostly alum, 10 contained alum and phosphate and one a large amount of calcium sulphite. No. Dak. Report.

58 samples examined. 17 deficient. N. Y. Com. of Adulteration.

Cresol.

3 out of 6 samples answered the Pharmacopœial tests. E. L. Patch.

Almost impossible to find a U. S. P. product. J. M. Francis.

Beechwood Creosote.

Sample contained neutral oils. E. H. Gane.

Cusso.

Chiefly staminate flowers. Henry Kraemer.

Ergot.

Lower than the usual average in extractive. 7 bales: 13.5 per cent., 13.9 per cent., 13.8 per cent., 13.3 per cent., 13.4 per cent., 14.8 per cent., 14.4 per cent. E. L. Patch.

Acetic Ether.

One sample 83.6 per cent. U. S. P. standard 90 per cent. E. L. Patch.

Concentrated Ether.

Common unwashed ether 74 per cent. sold, instead of 90 per cent. 2 samples had acid reaction and yielded residue. Strength was U. S. P. One sample answering all other tests gave a brown residue. E. L. Patch.

Eucalyptol.

Contains oil of eucalyptus. J. M. Francis.

Florida Water.

Prominent New York make was mostly wood alcohol. No. Dak. Report.

Formaldehyde.

31 samples examined, 27 inferior. Ohio Food Com.

Guarana.

4.24 per cent., 4.32 per cent., 4.9 per cent. E. L. Patch.

Ginger Root.

A product that had been exhausted in making fluidextract, then dried and powdered, was offered for sale. H. H. Rusby.

Gelsemium.

12 samples averaged to assay 0.43 per. cent. alkaloid. The lowest 0.25 per cent., the highest 0.5 per cent. J. M. Francis.

Guaiac Resin.

90 per cent. of the samples examined gave 85 per cent. or more of alcohol-soluble resin.

70 per cent. gave over 96 per cent. alcohol-soluble resin. J. M. Francis.

Headache Powders.

Formula claimed: Acetanilid, 4 grs.
Phenacetin, 1 gr.
Caffeine, 1 gr., etc.

The contents were: Acetanilid, 5 gr.
Sodium bicarbonate, 1 gr.
Phenacetin, none.
Aromatics and sugar-of-milk, q. s.
Caffeine, ¼ gr.

Claim: Acetanilid, 3 gr.
Phenacetin, 1 gr.
Caffeine, 1 gr., etc.

Contents: Acetanilid, 4 gr.
Sodium bicarbonate, 1 gr.
Phenacetin, none.
Aromatic powder and sugar-of-milk.
Caffeine, $\frac{1}{10}$ gr.

Hemlock Bark.

Mixed with æthusa synapium, and sometimes substituted by it wholly. E. H. Gane.

Hyoscyamus.

15 lots assayed 0.111. 2 were below 0.08. C. E. Venderkleed.

2 lots assayed 0.0465, 0.037. E. H. Gane.

Average of lots examined was 0.1. J. M. Francis.

Hardly any comes to New York which is second year's growth, as the U. S. P. requires. H. H. Rusby.

Hydrogen Dioxide.

Invariably above 3 per cent. C. E. Vanderkleed.

46 samples examined, only 4 deficient. N. Y. Com. of Adulteration.

Hydrastis.

Assayed as follows: 1.93 per cent., 2.9 per cent., 2.96 per cent., 3.16 per cent., 3.26 per cent., 3.68 per cent., 3.76 per cent. hydrastine. E. L. Patch.

Hydrastin Resinoid.

All sorts of products sold under this name. One labeled as representing the combined principles of the drug assayed but 2.8 per cent. hydrastin. No stronger than much of the root. Another said to contain 20 per cent. of hydrastin gave 7.4 per cent. Another 27 per cent. of hydrastin. Samples of powdered extract of hydrastis were found assaying as high as 11.1 per cent., and this product was marketed at one-half the price of some of the low-testing hydrastis. E. L. Patch.

Tincture Iodine.

60 per cent. of the samples were found to be official. Mass. State Board of Health.

584 samples examined, 8 contained wood alcohol, but were of full strength; 10 contained wood alcohol, and were deficient in strength; 54 were deficient in strength only. N. Y. Com. of Adulteration.

Iodoform.

Slight excess of soluble iodides and chlorides. E. L. Patch.

Ipecacuanha, Carthagena.

Assayed 1.85 per cent.

Rio, 1.88 per cent., 1.6 per cent., 1.9 per cent., 1.95 per cent., 1.75 per cent., 2.3 per cent., 2.05 per cent., 1.55 per cent. E. H. Gane.

One sample marked "probably high test" assayed 1.52 per cent. C. E. Vanderkleed.

Iron Phosphate Scale.

2 lots insoluble. 2 lots slowly soluble but completely soluble. 2 lots ammonio salts and not sodium salts. E. L. Patch.

Dried Sulphate of Iron.

88.43 per cent., 84.85 per cent., 84.5 per cent. E. L. Patch.

Pyrophosphate of Iron Scale.

Labeled U. S. P. Was not U. S. P. Contained 12.8 per cent. iron, 9 per cent. ammonia. E. L. Patch.

Jalap.

70 per cent. of the samples examined were above 8 per cent of resin; 30 per cent. were below 6 per cent. of resin. The highest was 10.5 per cent. resin. J. M. Francis.

One lot assayed 11 43 per cent. resin. E. L. Patch.

Jaborandi.

U. S. P. standard of 0.4 per cent. alkaloid is reasonable. In the period from 1895 to 1900, 22 lots averaged to assay 0.55 per cent., only 3 assayed above 0.75 per cent.

In the period from 1900 to 1905, 19 lots averaged 0.81 per cent,, 12 above 0.75 per cent., and only one below 0.5 per cent. J. M. Francis.

Larkspur Seed.

1.6 per cent. alkaloid. 0.4 per cent. alkaloid, 17.7 per cent. oil. 0.96 per cent. alkaloid, 21.9 per cent. oil. 0.4 per cent. alkaloid, 18 per cent oil. 0.92 per cent. alkaloid. 1.68 per cent. alkaloid. E. L. Patch.

Extract Lemon.

143 samples examined. 61 up to the standard in oil; 113 colored, 43 with dinitrocresol, 17 with tropaeolin, 53 with anilines not classified. 48 were below the stand-

ard in oil ranging from 0.5 per cent to 4,48 per cent. 34 did not contain any oil. 5th Report Ill. Food Com.

64 samples examined; 56 adulterated. Ohio Food Com.

56 samples examined; 37 standard, 11 deficient in oil, 8 without oil, 8 artificially colored, 1 had wood alcohol. No. Dak. Report.

One sample was half wood alcohol. Mass. Board of Health.

Sulphurated Lime.

Of 24 lots only 3 were below the 60 per cent. standard of the Pharmacopœia. The lowest was 38 per cent. the highest 85 per cent. The average 70.5 per cent. J. M. Francis.

66.5 per cent., 73.3 per cent. E. L. Patch Co.

Lithium Citrate.

Contains but 80 per cent. of lithium citrate. Pa. Ph. Asso.

Dried at 100° centigrade gave from 85 per cent. to 89 per cent. lithium citrate by the pharmacopœial test. It is claimed that a higher degree of heat should be used to make the salt anhydrous, not less than 120° centigrade. This additional loss of water would improve the results given above.

Linseed Meal.

The Pharmacopœia has advanced the proportion of oil from 25 per cent. to 30 per cent. Nearly all that the trade is obtaining is below 30 per cent. Samples from the principal source of supply gave 23.95 per cent. of oil, 27.3 per cent., 27.3 per cent., 26.3 per cent., 26.7 per cent., 26.65 per cent., 28.15 per cent.

12 barrels especially ordered gave 35.5 per cent., 35.5 per cent., 35.8 per cent., 35.3 per cent., 35.5 per cent., 35.6 per cent., 34.8 per cent., 34.5 per cent., 35.3 per cent., 35.4 per cent., 34.5 per cent., 37 per cent. of oil completely saponifiable. Druggists should not store this product in paper bags as they have been doing. From a small purchase the paper absorbs a large amount of oil and the product assays still lower than when purchased. E. L. Patch.

Lycopodium.

Several substitutes are offered under fancy names. Some are ferruginous earths mixed with true lycopodium; some dextrin and pine pollen. Some are adulterated with resinous compounds prepared by the action of anhydrous ammonia upon wet resin. E. H. Gane.

3 samples averaged 2 per cent. ash and gave a slight coloration with iodine. Microscopically examined did not detect impurity. E. L. Patch.

Lupulin.

65 per cent. soluble in alcohol, 29 per cent. insoluble, 6 per cent. moisture, 13 per cent. of ash. E. L. Patch.

Mace.

12 samples adulterated with nutmeg, wheat, starch, ginger. 5th Report Ill. Food Com.

4 samples gave 31.3 per cent. of oil, 35.7 per cent., 30.5 per cent., 30.4 per cent.

A sample of whole gave 30.4 per cent. All these samples yielded a blue color with iodine. A freshly powdered pure drug also gave a blue color with iodine. Some authorities state that there is no starch present in mace and the iodine coloration may be read by investigators as indicating an adulteration. Other reliable authorities state that mace contains 1.8 per cent. of a substance intermediate between starch and gum giving a blue color with iodine. E. L. Patch.

Magnesia Calcined.

Not white in color. Contained iron, contained magnesium carbonate, contained calcium, assayed 82.9 per cent. MgO. E. L. Patch.

Mercuric Oxide.

Large residue left on ignition. Not U. S. P. E. L. Patch.

Mercuric Chloride Crystals.

Contained an unusual amount of calomel.

Milk Sugar.

Adulterated with a fine grade of glucose commercially known as confectioner's grape sugar or starch sugar. Different lots differ greatly in density. E. H. Gane.

Comparative bulk is as 25.8 per cent. to 31 per cent. E. L. Patch.

Lots sold as pure sugar-of-milk consists of 52 per cent. lactose, 48 per cent. glucose. Lederle Laboratories.

Lots sold as milk sugar substitute were 12 per cent. lactose, 88 per cent. glucose. Lederle Laboratories.

Product sold as pure sugar-of-milk contained 24 per cent. and 28 per cent. glucose. E. L. Patch.

Mustard.

59 samples examined; 9 adulterated with turmeric, corn meal, wheat starch, rice starch, wheat flour. 5th Report Ill. Food Com.

Myrrh.

Contained much foreign matter and cheap acacia. E. L. Patch.

Commercial whole myrrh contains from 43 per cent. to 50 per cent. of alcohol-soluble matter.

The average is 50 per cent. The powdered myrrh yields from 30 per cent. to 38 per cent. alcohol-soluble matter. It has absorbent material added to it to make the powder permanent. J. M. Francis.

Nutmegs.

Poor, wormy and worthless. H. H. Rusby.

Conct. Nitrous Ether.

Assayed 60.5 per cent., instead of 88 per cent. E. H. Gane.

Nux Vomica.

Lots assayed 1.27 per cent. strychnine, 2.76 per cent. total alkaloids.

1.308 per cent. strychnine, 3.4 per cent. total alkaloids.

1.22 per cent. alkaloid, 1.25 per cent. alkaloid. E. L. Patch.

One sample assayed 1.47 per cent. strychnine. Considerable is above the U. S. P. standard. E. H. Gane.

7 lots averaged to assay 1.1 per cent. strychnine; only one exceeded 1.25 per cent. C. E. Vanderkleed.

Oil of Sweet Almonds.

Lots purchased for true oil of sweet almonds were true to name. For others quality not specified, peach-kernel oil was sent. E. L. Patch.

Oil of Anise.

Optical rotation +0.25°, insoluble in five volumes of 90 per cent. alcohol. Did not congeal at 10°. E. H. Cane.

Oil of Bitter Almond.

U. S. P. standard 85 per cent. benzaldehyde and 2 per cent. to 4 per cent. of hydrocyanic acid.

One lot assayed 1.49 per cent. of hydrocyanic acid; another lot 1.78 per cent.; another lot 2.3 per cent. E. L. Patch.

Oil of bitter almond and benzaldehyde are to all intents and purposes the same and the pharmacist might as well specify synthetic benzaldehyde in ordering. J. M. Francis.

This recommendation seems to be misleading and in error. The two products are not identical. Benzaldehyde must not contain any hydrocyanic acid. It can be used in making flavoring extracts and for general purposes of flavoring and perfuming. It cannot be used for making the official bitter-almond water and spirit of bitter almond. For these official preparations and all official uses the oil of bitter-almond containing the hydrocyanic acid must be used; otherwise the products are destitute of the medicinal action they are supposed to represent; but the official oil containing hydrocyanic acid should not be used in making extracts that may be employed in flavoring cold jellies and creams with poisonous effect. E. L. Patch.

Oil of Camphor.

This is not official. Various products are described under this name. Formerly it was easy to obtain the heavy oil of camphor containing a notable amount of safrol. At the present time this is not in the market. The so-called Japanese is sold as light oil of camphor with a sp. gr. at 25° centigrade of about 0.8736. It has a turpentine odor and little safrol odor. A sample submitted by one of the leading houses as pure light oil of camphor had a sp. gr. at 25° centigrade of 0.8716 and seemed to contain very little safrol.

Oil of Cassia.

This can be found assaying the full amount of cinnamic aldehyde, but the natural oil from all the sources at our command, contained lead, coming from the lead container in which it is imported. The double-distilled oil, having sp. gr. at 25° centigrade of 1.0508, yielding 90 per cent. of cinnamic aldehyde, is of good color, fine odor, and is free from all metals. This is the only product found to answer these requirements. E. L. Patch.

Two out of three samples showed resin present. Usual assay 67 per cent. to 75 per cent. of cinnamic aldehyde. Pa. Ph. Assoc.

Oil of Clove.

4 lots assayed 86 per cent., 85 per cent., 83 per cent., 86 per cent. of eugenol. Pharmacopœial standard 80 per cent. E. L. Patch.

Ethereal Oil.

The U. S. P. should have a sp. gr. of 0.905 at 25° centigrade. This product is entirely different from any of the oils of wine in the market which are sold to the pharmacist as ethereal oil. The pharmacist purchasing these so-called ethereal oils and making his compound spirit of ether by the pharmacopœial formula, is marketing a deficient product in every case. It bears no resemblance to that made by using the official ethereal oil. Compound spirit of ether, marketed by many of our wholesale manufacturing chemists as U. S. P., does not bear any resemblance to the official product. It is sold at a price which will not pay for the ethereal oil alone. E. L. Patch.

Oil of Eucalyptus.

4 samples assayed 36.3 per cent. to 63.56 per cent. cineol. 2 were oil of eucalyptus amygdalina, and not globulosus. Pa. Ph. Assoc.

Out of many samples 2 assayed below 50 per cent. cineol; one 22.5 per cent.; another 43.6 per cent. C. E. Vanderkleed.

This oil is adulterated with 12 to 20 per cent. of castor oil. Chemist and Druggist.

Select oil obtained, having sp. gr. of 0.916 at 25° centigrade, assayed 65 per cent. cineol. E. L. Patch.

Oil of Lavender.

3 lots had a sp. gr. of 0.870 to 0.890, and were not up to the U. S. P. limit of solubility. E. H. Gane.

Oil of Origanum, Commercial.

Varies greatly. Lot No. 1, sp. gr. 0.872, odor good, nearly colorless.
2, sp. gr. 0.874, reddish color, fair odor.
3, sp. gr. 0.873, odor good, nearly colorless.
4, sp. gr. 0.899, tarry odor, dark color.
5, sp. gr. 0.874, tarry odor, dark color. E. L. Patch.

Olive Oil.

12 samples all pure. Report of Ill. Food Com.

13 samples. 2 contained small amounts of cottonseed oil; one a very large amount. Pa. Ph. Assoc.

6 samples contained cottonseed oil; 3 samples peanut oil. E. H. Gane.

64 samples. 31 were pure, 28 contained cottonseed oil, and 5 sesame oil. C. H. LaWall.

Sample 1, sp gr., 0.911; iodine number, 77.7; saponification number, 185; nitric acid test, o. k. This lot was condemned by three retail druggists as not answering the pharmacopœial tests. It was stated that a professor in one of our colleges informed his class that the only pure olive oil obtainable was that obtained in bottles of a wholesale grocer. They appear to have been condemned by this nitric acid test. Investigation showed that some of the operators used full strength nitric acid, sp. gr. 1.403, or 68 per cent., which will brown pure olive oil. They did not notice that the Pharmacopœia calls for 61 per cent. acid, having a gravity of 1.37; nor were they particular to use equal volumes as directed. They used a large excess of the acid.

2 samples that were complained of as impure by the pharmacopœial nitric acid test, were submitted to the Drug Laboratory at Washington, and pronounced pure.

4 other samples had sp. gr. 0.906, iodine number, 80.05.
sp. gr. 0.911, " " 83.3.
sp. gr. 0.9118, " " 83.93.
sp. gr. 0.91198. " " 82.07.

Oil of Peppermint.

Sp. gr. at 25° centigrade, 0.6959; yellow color, 7.43 per cent. menthyl acetate, 39.91 per cent. total menthol.

Sp. gr. 0.8975, yellow color; 60 per cent. total menthol.

Lot 3. 9.27 per cent. menthyl acetate; 52.73 per cent. total menthol.

Lot 4. 8.56 per cent. menthyl acetate; 24.86 per cent. total menthol.

Lot 5. 35 per cent. total menthol.

Lot 6. 45 per cent. total menthol. E. L. Patch.

Sp. gr. 8.876; optical rotation, −10°; ester, 4.4 per cent.; total menthol, 30.42 per cent.; contained 50 per cent. of turpentine. The U. S. P. requirements of not less than 8 per cent. of ester are too rigid, and exclude the finest grades of oil that contain 4 per cent, to 6 per cent. Presumably the object of the test is to exclude the Japanese oil, which runs from 3 per cent. to 6 per cent., but it also excludes the finest Mitcham and Saxon oils, and some of our fine redistilled oils. E. H. Gane.

Oil of Rosemary.

The pharmacopœial requirements are too high as evidenced by the fact that no oil of U. S. P. standard is obtainable in the New York market.

No. 1. 2.6 per cent. ester, 8 per cent. total borneol.
No. 2. 2 " " 11.76 " " "
No. 3. 2.6 " " 10.4 " " "
No. 4. 2.38 " " 8.1 " " "
No. 5. 2.6 " " 12.6 " " " E. H. Gane.

No. 1. 3.77 per cent. ester, 11.48 per cent. total borneol.
No. 2. 3.42 " " E. L. Patch.

Oil of Savin.

One lot adulterated with oil of turpentine. C. E. Vanderkleed.

Oil of Sandal.

10 samples purchased in the open market, representing the leading American and European producers, all assayed over 90 per cent. santalol. J. M. Francis.

8 lots all U. S. P. 1 lot sp. gr. at 25° centigrade 0.979, 96.1 per cent. santalol. E. L. Patch.

Oil of Sassafras.

Much of that in the market is spurious and consists wholly or largely of camphor oil. As oil of sassafras owes its virtues almost wholly to safrol it would be advisable to purchase safrol direct and use it instead of the oil. J. M. Francis.

This advice is likely to make trouble for the pharmacist. If he sells safrol as oil of sassafras and so lables it, he is liable under the Pure Food and Drug Law. Oil of sassafras has rotation of + 4° under the specified condition. Safrol is optically inactive. E. L. Patch.

Oil of Thyme.

The U. S. P. statement that this oil is colorless would seem to exclude the finest grade of thyme oil which is always highly colored, and puts a premium on the white oil of thyme of notorious fame.

Of samples from importing houses only one was up to the U. S. P. standard.

Sample No. 1.	sp. gr.	0.886	phenol	12½	per cent.	
No. 2.	“	0.900	“	17.4	“	
No. 3.	“	0.868	“	4	“	
No. 4,	“	0.889	“	22	“	
No. 5.	“	0.856	“	3	“	
No. 6.			“	5	“	E. H. Gane.

Oil of Tar.

Varies in physical properties. The Pharmacopœia indicates the light oil of tar. Considerable of the heavy oil of tar, sp. gr. 1.04 and over, very thick and dark-colored, is marketed in place of the light oil. E. L. Patch.

Oil of Turpentine.

There is being marketed a product distilled from sawdust, pine chips, pine roots and other refuse of saw-mills. When crude it has the characteristic pyroligneous odor. Its qualities when refined are not well known. J. M. Francis.

Pancreatin.

Market samples by the new pharmacopœial test converted ten times weight of starch, 15 times, 25 times, 20 times, 25 times, 22½ times. E. L. Patch.

1 lot converted between 1 and 2 parts of starch. C. E. Vanderkleed.

Black Pepper.

93 samples examined. 33 were adulterated with shell, olive stone fiber, starch, cocoanut shell. 5th Report Ill. Food Com.

Elixir Lactated Pepsin.

A popular brand contained no lactic acid, only 0.2 per cent. of hydrochloric acid, had no pepsin power, 10 Cc. exerted no appreciable action on 10 grams of egg albumen. E. L. Patch.

White Pepper.

41 samples examined. 10 adulterated with one or more of the following adulterants —shell, olive-stone, corn-starch, wheat-flour, cocoanut shell, buckwheat. 5th Report Ill. Food Com.

Petrolatum.

"Yellowish to light amber in color, melting-point 45° to 48° centigrade, completely volatilized without characteristic odor, neutral, no fixed oils or fats separated by saponification with alkali process. 1 volume melted, mixed with 2 volumes of sulphuric acid in a test-tube, kept for 15 minutes in hot water, occasionally agitated, the acid should not acquire a deeper tint than brown nor lose its transparency." A pharmacist cannot find a product that will meet these requirements. In applying the test with sulphuric acid the temperature should be indicated. One man will consider 50° centigrade as hot, and another the boiling-point, so that different operators do not apply this test alike. The requirements for the white petrolatum are the same as for amber, except as to color. Amber petrolatum cannot be had with the U. S. P. limits of fusing-point, but not one of many samples of amber, pale amber and pearl-white, would stand the sulphuric acid test. The Standard Oil Company state that they do not produce a product that will. 3 samples of American white petrolatum were obtained that met the requirements for fusing-point, but the acid layer was decidedly brown in every case, and was transparent in only one case. The Russian grades are better in color, and 5 samples all stood the acid test, but the fusing-point ranged from 33° to 37°. E. L. Patch.

Phenacetin.

Adulterated with parachloro-acetanilid. Melting-point 119° to 120° centigrade. E. H. Gane.

Pinkroot.

Frequently mixed with blue cohosh owing to careless collecting. E. H. Gane.

Podophyllin.

3 per cent. insoluble in alcohol; 5 per cent. insoluble in alcohol; 5.6 per cent. insoluble in alcohol; 2.5 per cent. insoluble in alcohol; 5.5 per cent. insoluble in alcohol.

1 per cent. insoluble in alcohol; 66 per cent. soluble in chloroform; 80 per cent. soluble in ether; 0.4 per cent. ash.

Completely soluble in alcohol. 67 per cent. soluble in chloroform; 75.4 per cent. in ether. E. L. Patch.

This product may be grossly adulterated and meet all the U. S. P. tests. The yellow variety is precipitated by alum. The solubilities do not conform to the U. S. P., and it contains less than 1 per cent. of ash. The brown variety is precipitated with hydrochloric acid, and is nearly of equal merit with the U. S. P. G. Martin.

Potassium Acetate.

No. 1. 2.32 per cent. absolute acetic acid in excess.

No. 2. 0.89 per cent. of chloride with trace of sulphate.

No. 3. 0.26 per cent. of chloride with trace of sulphate.

No. 4. 0.22 per cent. of chloride with trace of sulphate. E. L. Patch.

Potassium Bromide.

23 lots of crystal were of the pharmacopœial standard; one lot of granular was 24 per cent. only. E. H. Gane.

Potassium Citrate.

0.26 per cent. chloride, 0.42 per cent. of free citric acid. E. L. Patch.

Potassium Cyanide. (*Maltese Cross Brand.*)

"95 per cent. pure," contained 71.5 per cent. potassium cyanide, 26 per cent. sodium cyanide.

Sample 2, by the chlorides method, gave 74 per cent. potassium cyanide, 18.4 per cent. sodium cyanide. By the potassio-platinic chloride method, 70.3 per cent. potassium cyanide, 21.2 per cent. sodium cyanide. E. L. Patch.

Potassium Iodide.

No. 1. Potassium iodate in excess. 12 lots O. K.

No. 2. Did not show iodate in 5 per cent. solution of U. S. limit, but in a 10 per cent. solution gave test for iodate.

Potassium Sulphate.

One lot had 0.4 per cent. of chloride; another 0.05 per cent. chloride. E. L. Patch.

Quinine Alkaloid.

Varied in excess of moisture from 12 per cent. to 22 per cent. E. L. Patch.

Quinine Sulphate.

4 lots did not pass the U. S. P. ammonium test. E. H. Gane.

Saffron.

Only 23 per cent. saffron petals; the balance aniline-dyed petals of magnolia and uncolored foreign matter. N. Y. City Health Dept.

Salts Dried.

Such as sodium sulphate dried, sodium phosphate dried, magnesium sulphate dried, frequently contained dirt and foreign matter, owing to careless drying. E. H. Gane.

Sarsaparilla, Mexican.

A bundle weighing 4½ lbs., contained in the center 19 ozs. of dirt. H. Kraemer.

Scammony Resin.

"When stirred in porcelain dish with equal weight of sulphuric acid, it should not gradually turn red." Resin freshly prepared from virgin scammony turns red. All the samples examined turned red. The addition of 15 per cent. of common rosin made little difference. Dissolving 0.1 of pure resin of scammony from virgin scammony in 5 Cc. of 5 per cent. solution of caustic potassa, using heat, adding hydrochloric acid to acid reaction, the resin is not precipitated and only a very faint cloudiness results. If the resin of scammony contains 5 per cent. of common rosin there is much greater turbidity. If it contains 15 per cent. of common rosin there is a marked turbidity and precipitate. Market samples tested stood this test.

Scammony Resin, Imported Product.

Report from chemist in Edinburgh:

Entirely soluble in 90 per cent. alcohol.
Entirely soluble in chloroform.
99.9 per cent. soluble in ether.

The amount of ash present is so small as to be unweighable, and we may therefore describe the resin as practically free from ash.

Report from chemist in this country:

Soluble in alcohol, 99.5 per cent.
Soluble in chloroform, 99.5 per cent.
Soluble in ether, 98.65 per cent.
Ash, .20 per cent.
Acid number, 10.

The acid number represents the number of millegrams of potassium hydroxide which are necessary to neutralize one gram of resin under examination. As scammony resin has a low acid number, which we found by numerous determinations to be from 10 to 15, and as rosin has a high acid number, 155 to 175, the adulteration of scammony by rosin can readily be determined by the indication of a high acid number, as this would increase in proportion to the amount of rosin present.

Scammony Resin, Domestic.

Chemist report first lot to test as follows:

Soluble in alcohol, 99.2 per cent.
Soluble in chloroform, 95.7 per cent.
Soluble in ether, 92 per cent.
Ash, .20 per cent.
Acid number, 12½.

A more recent lot shows the following solubilities:

Soluble in alcohol, 99.62 per cent.
Soluble in chloroform, 95.36 per cent.
Soluble in ether, 85.08 per cent., and
Ash, .17 per cent. G. Martin.

Strychnine T. T. Strychnine Pills.

Labeled $\frac{1}{60}$ grain, contained $\frac{1}{40}$ grain.
Labeled $\frac{1}{60}$ grain, contained $\frac{1}{30}$ grain. Mass. Board of Health.

Seidlitz Powders.

Labeled full weight, 10 in a box. Blue papers averaged to be 15 grains each short in weight, and the white papers 7 grains each short in weight. "The popular kind," "the kind that effervesces well." Sample 1, the blue papers, contained 50 per cent. of rochelle salt and 50 per cent. of bicarbonate of sodium, instead of 75 per cent. and 25 per cent., as the Pharmacopœia demands.

Sample 2 contained 60 per cent. rochelle salt and 40 per cent. of bicarbonate of sodium. E. L. Patch.

Silver Nitrate.

Contained trace of lead. E. L. Patch.

Contained trace of lead. E. H. Gane.

Powd. Squill.

28 per cent. ash, mostly kaolin or other clay. E. L. Patch.

Powd. Castile Soap.

3 per cent. of moisture, free from animal fats and metals, 7.2 per cent. insoluble in alcohol, no excess of alkali. Fine product.

No. 2. 54 per cent. insoluble in alcohol, 34 per cent. is talc.

No. 3. 30 per cent. insoluble in alcohol, 20 per cent. is talc. E. L. Patch.

Sodium Bromide.

97 per cent., 97.1 per cent., 98.8 per cent. E. H. Gane.

Sodium Carbonate.

Contained 0.32 per cent. of chloride.

Dried, 0.17 per cent. chloride.

Anhydrous, assayed 98.5 per cent. E. L. Patch.

Sodium Carbonate, Monohydrated.

Slight trace of iron, assayed 98.31 per cent. E. L. Patch.

Sodium Glycerophosphate.

Sometimes is alkaline; sometimes is acid. Varies from 0.175 per cent. NaOH to 1.4 per cent. H_3PO_4. E. L. Patch.

Sodium Hypophosphite, Purified.

Lot 1. 0.71 per cent. free NaOH.

Lot 2. 0.029 per cent. free NaOH. E. L. Patch.

Sodium Nitrate.

Contains chlorate, leading astray when the sodium nitrate is used to burn off organic matter in estimation of chlorine. Merck's Report. E. L. Patch.

Sodium Phosphate, Purified Granular.

Several barrels all stood the U. S. P. arsenic test; contained a slight trace of sulphate.

Dried sodium phosphate stood tests of chemical purity, but did not dissolve with a clean solution. E. L. Patch.

Sodium Sulphite, Dried.

No. 1. 100 parts represented 157 of crystallized salt.

No. 2. 100 parts represented 146 of crystallized salt.

No. 3. 100 parts represented 167 of crystallized salt.

No. 4. 100 parts represented 137 of crystallized salt.

These represented four different makes. The probability is that different lots from the same maker would vary in the same way. All contained an excess of sulphate. E. L. Patch.

Sodium Sulphocarbolate.

Sample decidedly pinkish instead of white. E. L. Patch.

Solution of Cresol.

80 per cent. contain carbolic acid crude instead of cresol. R. Schumacher.

Spermaceti.

3 samples had melting-point 42.5° centigrade, 43.5°, 44°.

1 gram with 1 gram of anhydrous sodium carbonate, 50 Cc. of alcohol, boiled, cooled, filtered, acetic acid added, gave precipitation in every case. E. L. Patch.

Stramonium.

9 lots averaged to assay 0.458 per cent., only one below the standard of 0.35 per cent. C. E. Vanderkleed.

Tablets.

Claim: pepsin, pancreatin, diastase, lactic acid, hydrochloric acid, goldenseal, subnitrate of bismuth, ginger, nux vomica.

Appeared to be over one-half talc; neutral; no free lactic or hydrochloric acids; bismuth in very minute quantity; no alkaloids present; no goldenseal or nux vomica.

No. 2. Claim: ammonium chloride 1 gr., powd. cubeb ½ gr., wildcherry ½ gr., terpin hydrate 1½ grs., sugar and licorice q. s.

Contained ammonium chloride ½ gr., powd. cubeb ¼ gr., wild cherry ¼ gr., terpin hydrate ½ gr. E. L. Patch.

Tartar Emetic.

Lots from 2 different manufacturers contained an excess of arsenic. E. L. Patch.

Terebene.

3 lots gave a colored residue ranging from 0.111 to 0.150 from 10 Cc. E. L. Patch.

Thymol Iodide.

One lot contained soluble iodide and trace of free iodine. E. L. Patch.

Vanilla Extract.

125 samples examined. Many artificially colored. 7 pure but inferior in strength; 3 had vanillin added to vanilla; 5 were made from tonca only; 16 mixtures of tonca and vanilla; 14 vanillin and coumarin; one coumarin only; one contained oil of bitter almond. Report of Ill. Food Com.

35 samples examined. 1 inferior; 6 vanillin and coumarin; one coumarin only. No. Dak. Report.

Vanilla Beans, Whole.

Have been marketed with the central pulpy portion pressed out. H. Kraemer.

White Wax.

6 samples examined. 2 pure; 3 had some paraffin; one much paraffin. Pa. Ph. Assoc.

Yellow Wax.

Many samples adulterated, contained as high as 85 per cent. or 90 per cent. of paraffin. Pa. Ph. Assoc.

2½ grams of yellow wax with 12½ Cc. of sulphuric acid, heated for 15 minutes at 160° centigrade, poured into an excess of water, did not separate any particles on the surface. Precipitate washed with water to free from acid, with alcohol to free from water; washed with chloroform, gave a considerable waxy residue. 2 subsequent treatments following the same method, reduced this residue to 0.1. Saponification number of the same sample was 94.3. E. L. Patch.

Whiskey.

Contains sugar and artificial coloring. Mass. Board of Health.

Zinc Oxide.

English samples were in fine powder, free from grit, slight yellowish tint, no arsenic, lead, copper, etc., no alkali, no sulphate; slight trace of chloride and iron.

American samples average 99.05 per cent. ZnO. Contained trace of iron and chloride. E. L. Patch.

Arsenic is frequently present. J. M. Francis.

Zinc Phosphide.

Sample 1. 36 per cent. insoluble in hydrochloric acid.

Sample 2. Notable quantity insoluble in hydrochloric acid. Contained iron. E. L. Patch.

Zingiber.

Refuse from percolation sold for ground ginger. H. H. Rusby.

SUPPLEMENTARY REPORT FROM LYMAN F. KEBLER, DRUG LABORATORY, WASHINGTON, D. C.

(Received too late to be included in preceding table.)

Citric Acid, C. P.

Contained metallic lead and a trace of sulphate.

Hydrochloric Acid, C. P.

Contained a considerable quantity of fibrous matter. The non-volatile matter on the steam-bath in 50 Cc, amounted to 9.2 milligrams.

Approximately two-thirds of this residue consisted of ferric chloride.

Hydrochloric Acid, C. P.

Contained free chlorine and 8.6 milligrams of non-volatile matter in 50 Cc. when evaporated on the steam-bath.

Hydrochloric Acid, C. P.

Labeled free from arsenic. Examination, however, showed that the acid did contain arsenic.

Carbolic Acid, Pure Crystals.

Physical appearance brownish-black; an extremely poor quality.

Phosphoric Acid, U. S. P.

Contaminated with silicious matter.

Phosphoric Acid, U. S. P.

Contaminated with iron.

Sulphuric Acid, C. P.

Extremely dark in color, due to action of acid on luting employed in closing packages.

Tannic Acid, U. S. P.

The samples examined have been, with one exception, extremely poor in quality in nearly all cases, and a considerable amount was insoluble in water, and there was also much gummy matter present.

Ammonium Acetate, C. P.

Highly contaminated with pyridine bodies.

Ammonium Hydroxide, C. P.

Contained sodium and pyridine, and titrated much lower than indicated by label.

Animal Charcoal, U. S. P., Purified.

Contained 78.44 per cent. of moisture.

Borax, U. S. P.

Produced an extremely dirty, turbid solution, when dissolved in water.

Calcium Oxide, C. P.

The two samples examined were very dark in color, contained iron, aluminum, sand, sulphates and chloride. Virtually, no better than ordinary lime employed for building purposes.

Calcium Carbonate, C. P.

Coarse, heavy powder, containing sulphates, chlorides, and a compound of sodium.

Cochineal.

Best quality, contained approximately 15 per cent. of talcum, and possessed a tinctorial value equivalent to only 75.

Copper Sulphate, C. P., Strictly Iron-Free.

Contained iron in appreciable quantities.

Glycerin.

Fifteen samples have been tested. All of these complied with the U. S. P. requirements excepting the volatile fatty-acid test. Only three of these were free from this impurity. It is of interest to note that none of the glycerins tested contained an excess of arsenic and in several cases they were virtually free from this impurity.

Magnesium Chloride, C. P.

An aqueous solution left an insoluble gelatinous residue.

Potassium Oxalate, C. P.

Contained a considerable amount of insoluble material.

Rochelle Salt, U. S. P.

The chief impurities of this chemical during the past year have been dirt and metallic lead.

Sodium Bisulphate, C. P.

Contained only 80.93 per cent. of sodium bisulphate.

Sodium Carbonate, C. P., Anhydrous.

Contained silicious matter and 12.2 per cent. of moisture.

Sodium Carbonate, C. P., Anhydrous.

Contained dirt, silicious matter and 8.53 per cent. of moisture.

Sodium Phosphate, C. P.

Contained dirt and an excess of arsenic.

Sulphur, Precipitated.

Contained 47.9 per cent. of calcium sulphate, the calcium sulphate being calculated on the anhydrous basis.

Mr. Lemberger moved to receive and refer for publication, and the Chair called for discussion.

Mr. Kebler stated that he had refused to sign the report for several reasons. One reason was that the report criticised the attitude of the Department of Agriculture toward the new Pure Food and Drug Law, and it was not customary for a man to sign his own death-warrant. The objectionable clause, which he said reflected on every man in Washington having anything to do with the interpretation of the law, was the one asking that means be adopted to prevent injustice to the pharmacist through thoughtless, arbitrary or finical interpretation of the law, etc. He disclaimed the idea that Mr. Patch meant this as a reflection, but it nevertheless appeared so to him. Mr. Kebler also objected to Mr. Patch's remarks on the variation of alcoholic strength in finished preparations. He said this was a matter he had given considerable attention to in the past few years, and he realized the difficulties. His desire was to make the operation of the law fair, equal and just. The intention of his department, he said, was by experimentation to establish standards for these preparations, and thereby arrive at a fair and just conclusion in regard to them. Another thing in the report he took exception to, though it was not a vital matter, was the statement that "adulteration with intent, is quite rare." He said that out of 3824 samples of drugs examined, good, bad and indifferent, 125 had been found to be adulterated beyond the possibility of question, and he so advised Mr. Patch, and he did not consider this proportion of about three per cent. as "quite rare." In regard to the methods of assay discussed in the report, he called attention to the fact that there there was a marked variation in assays of the same product made by different chemists the country over, and there was no use in quibbling over it or trying to conceal it. But it was these same chemists, nevertheless, whose co-operation the Department of Agriculture desired in arriving at fair and just standards.

Mr. Hallberg thought Mr. Kebler should remember that he came here as a member of the American Pharmaceutical Association, and should temporarily lose sight of the fact of his official connection with the Drug Laboratory at Washington. He did not regard the expressions contained in the report as any serious reflection upon the powers called upon to interpret the law. He was of opinion that anyone who had read the provisions of section 7 of the law would realize that the "hand of the vandal had been placed upon the titles of the Pharmacopœia," and that the bill itself disclosed the density of ignorance of the members of Congress on questions of this kind. In his judgment the law required the most careful interpretation in order to protect the pharmacists of the country against great injury and injustice. The act was not specific enough in its terms, and it required the most carefully prepared rules for its proper enforcement by the Department of Agriculture; he thought the least this Association could do was to call attention to this fact in no uncertain way. It should be demanded that the rules and regulations adopted should conform to pharmaceutical practice.

Mr. Kebler said he did not ask that the clause referred to in the report be stricken out, but simply said he could not sign the report in that shape. He also said that the section criticised by Mr. Hallberg made full provision to cover the situation.

Mr. A. B. Lyons thought the Chief of the Drug Laboratory altogether too thin-skinned, as he did not think the wording of the report reflected upon anybody at all. There is always a great deal of disposition on the part of officials to stick to the letter of the law in enforcing it, and it is wise to make provision to guard against this disposition as far as possible.

Nominations for officers of the Section on Scientific Papers for the ensuing year were called for as the next order of business.

Mr. Hynson nominated Mr. Reid Hunt of the Public Health Service at Washington for Chairman, and the motion was seconded by Mr. Francis, of Detroit.

Mr. Hallberg nominated Mr. H. M. Gordin, of Chicago, for Secretary, and the motion was seconded by Mr. Sayre and Mr. Lloyd, but Mr. Gordin said it was utterly impossible for him to serve, as he could not give the time to it. Mr. M. I. Wilbert, of Philadelphia, was then nominated for Secretary by Mr. F. B. Hays, but he also peremptorily declined for the lack of time to give to the work. Thereupon, Mr. Puckner nominated Mr. Virgil Coblentz, of New York City, and paid the gentleman a graceful compliment upon his work in and for the Section. Mr. Coblentz also was disposed to decline, as he doubted his ability to be present at the next meeting; but when the Chairman reminded him that the Association would very likely meet in New York City next year, and asked him to permit his name to remain before the Section, he did not press his objection.

The Chair called attention to the presence of Mr. John Uri Lloyd, of Cincinnati, and said he had just returned from the Orient, where he had procured some samples of pure attar of roses, as well as of the flowers from which the extract was made, and he felt sure the members would be glad to hear from him on this subject.

Mr. Lloyd began by saying that he felt a little hesitancy in taking even five minutes of the time of the Section upon a subject not scientific, but that he hoped the gentleman into whose hands the specimens he had collected would go for investigation would make it scientific. He then proceeded to narrate how he had been able, upon his recent trip to the Orient, to procure and bring home with his own hands from the interior of Turkey genuine samples of attar of roses, one made from the white rose and the other from the red, which samples he exhibited and laid upon the table for further inspection. First, he told of a visit he had made to the shop of a Bulgarian merchant in the city of Constantinople, recommended to him as thoroughly reliable and honest, from whom he had bought a specimen of attar of rose that the merchant had guaranteed by writing in Bulgarian on the label of the bottle to be absolutely pure. This sample he also exhibited.

Then it occurred, Mr. Lloyd proceeded to say, as he remembered it was the month of roses, that he would like to visit the country where attar of roses is distilled, and in a few days he found himself on the way to the foot of Mount Olympus, the abode of the gods of mythology, to the valley where old Æsop wrote his fables, where these rose-gardens flourish, and the attar of rose is to be found in all its purity. He described his journey on a little Turkish steamer through the Bosphorus and across the Sea of Marmora to the Asiatic coast, and thence through olive-groves and by ancient Brusa, once the seat of Moslem power, to the valley of roses. Here he found in the midst of his rose plantations an old Turk, whose lofty dignity and fine courtesy put to shame the expression "unspeakable Turk," and proved the right of "Turkish gentleman" instead. In fact, his experience with the cultivated Turks generally was, that they are a very fine people. First, this old Turk, before he would answer any questions, must show his Oriental hospitality by having his guests sip Turkish coffee with him. And he took special pride in making a cup of coffee for his guest, using therefor rose-water instead of spring-water. Then he took pride in showing his extensive rose-gardens presenting very much the appearance of a field of red raspberries. Next they were shown the method of collecting the roses and transferring them to the still. Afterwards they returned to the home of the old Turk; and there, near his dwelling-house, stood the rude still, operated by water from snow-capped Olympus. Here the finest of attar-of-rose is made. Mr. Lloyd then described the still, and the crude process of distillation conducted before his eyes, and how the purest of attar of rose was then and there made and handed to him. He could foresee a vast development in this industry, under modern methods. These specimens were unquestionably authentic, he said, as they had not left his possession from the day they were distilled to this hour, when they would be placed in the hands of Dr. Kremers for investigation and report. He exhibited them again, as also specimens of the white and red roses from which they were made, and called attention to the fact that, despite the warm weather prevailing, these samples of undoubtedly pure attar of rose were congealed. (Applause).

The Chair said he was sure the members had been extremely interested in hearing Mr. Lloyd, and that certainly there were now at least two genuine samples of attar of rose in this country. It had never been known before whether the attar of roses of commerce was genuine, but there was some chance now of knowing about this.

The Chair then called on the General Secretary for an abstract of a paper on Eriodictyon, by F. B. Power and Frank Tutin, and of another on Grindelia, by P. E. F. Perrédès. The Secretary presented the papers accordingly, explaining that they had unfortunately been received too late to admit of publication and distribution at the meeting. He said the paper of Mr. Perrédès was, in a measure, a sequel to a paper presented last year by Dr. Power on Grindelia. He exhibited some photographs and drawings of plants discussed in the paper—plants grown by Mr. Perrédès himself. The text of the papers here follows:

CHEMICAL EXAMINATION OF ERIODICTYON.

BY FREDERICK B. POWER, PH. D., AND FRANK TUTIN.

[A contribution from the Wellcome Chemical Research Laboratories, London.]

Eriodictyon was first officially recognized by the United States Pharmacopœia in the edition of 1890, and was retained in the eighth decennial revision (1905) of that work, where it is defined as "the dried leaves of *Eriodictyon californicum* (Hooker and Arnott), Greene." It does not appear to have been included in any other national pharmacopœia.

A systematic description of the plant, under the title of *Eriodictyon glutinosum*, Benth., is given in the "Synoptical Flora of North America," by Asa Gray, Vol. II., Part I., p. 176, New York, 1878. It is also described in Jepson's "Flora of Western Middle California," p. 440, where it is stated that the generic name is derived from the Greek words *erion*, wool, and *diktuon*, a net, by reason of the netted, woolly undersurface of the leaves. Various popular names have been given to the plant, such as "Yerba Santa," "Mountain Balm," "Consumptives' Weed," "Bears' Weed," and "Gum Bush."

One of the earliest notices in pharmaceutical literature of *Eriodictyon californicum* was a paper by Henry S. Wellcome,* which was illustrated by some excellent drawings. In that paper a description was given of the plant, together with indications of its medicinal uses, and the preparations adapted for its administration. It was also noted that the leaves yield from 20 to 30 per cent. of resin, which appeared to consist of several distinct substances, but these were not further examined chemically.

Charles Mohr,† in 1879, published a paper entitled "Analysis of *Eriodictyon californicum*," but this examination appears to have been conducted for the most part with only ten grams of the air-dried herb, and the results were therefore of correspondingly limited value. He states to have ascertained the presence of a little volatile oil; a bitter, acrid resin, soluble in ether; an inert resin, which was extracted by alcohol; tannic acid and coloring matter; a peculiar glucoside of the tannic acid series, but not more definitely characterized; gum, etc. The therapeutic value of the drug was attributed by him to the acrid resin which is soluble in ether.

J. Moeller ‡ has given a description of the anatomy of eriodictyon leaves, in which he notes that the parenchyma is free from tannin, and that strong alcohol extracts from 30 to 40 per cent. of resin of a tolu-like odor.

R. Thal,§ in 1883, published a series of papers relating to the composition and distribution of "ericolin," in which he states that he has not only found this substance in a large number of plants belonging to the *Ericaceæ*, but also in *Eriodictyon glutinosum*, Benth.=*E. californicum* (H. and A.), Greene, and indicates it to be present in the leaves of this plant in considerable amount. The name "ericolin," it may be noted, appears to have been first given by Rochleder and Schwarz ‖ to a substance obtained from *Ledum palustre*, Linn. and several other plants belonging to the *Ericaceæ*. It was described by them as a brownish-yellow, amorphous powder, possessing a very bitter taste, and having the property, when boiled with dilute sulphuric acid, of becoming resolved into sugar and "ericinol." The latter substance was stated to be a colorless oil, which on exposure to the air rapidly becomes dark brown, and possesses a peculiar not unpleasant odor.

The "ericolin" obtained by Thal (*loc. cit.*) from *Ledum palustre* was described as an odorless, brownish-yellow, sticky, hygroscopic substance, which is readily soluble in alcohol and ether-alcohol, but not soluble in water without decomposition. The last-mentioned character of the substance appears, however, quite inconsistent with the method adopted for its extraction, the first stage of which consisted in boiling the herb with water for several hours. According to Thal, the products formed by heating ericolin with dilute mineral acids are a brown-black, resinous substance, sugar, and ericinol, but he assumed that the latter, through absorption of the elements of water, becomes converted into a so-called "hydroericinol," which was described as a viscid, brownish-yellow mass, having a peculiar, strong, somewhat narcotic odor. In connection with this description which Thal has given of ericolin and its hydrolytic products, it is of particular interest to note his concluding remark on the subject, namely, that "as he could not find a characteristic chemical reaction for 'hydroericinol,' he was obliged to depend upon its peculiar odor for ascertaining the distribution of ericolin in the *Ericaceæ*."

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* "The Pharmacist," Chicago, Feb., 1876, p. 33, and Proc. A. Ph. A., 1876, *24*, p. 134.

† Proc. A. Ph. A., 1879, *27*. p. 736.

‡ *Ibid.*, 1884, *32*, p. 141.

§ Pharm. Zeit. f. Russland, 1883, xxii, pp. 209–219, 233–237, 249–259. Abstracted in Proc. A. Ph. A., 1884, *32*, p. 146.

‖ Wien. Akad. Ber., *9*, 308; *11*, 371.

It is apparent from the preceding statement that the only evidence adduced by Thal for the existence of "ericolin" in the large number of plants examined by him, including eriodictyon, was the odor developed on heating specially prepared extracts of the respective plants with dilute sulphuric acid. Our own observations concerning the character of the above-described compounds, insofar as they pertain to the constituents of eriodictyon leaves, are recorded in the experimental part of this paper.

R. Rother,* in a paper entitled "Some Constituents of Yerba Santa," has considered the use of preparations of eriodictyon for disguising the bitter taste of quinine. He attributed this effect to "a certain resinous component of the leaves, which is characterized by the property of forming in contact with some bases very soluble compounds," and assumed that these, "when mixed with quinine salts, generate by double decomposition an ordinarily insoluble quinine-resin salt." No definite constituent of the leaves, however, was isolated by him.

A. Quirini,† in 1887–88, described the isolation of a substance from the leaves of eriodictyon, which he regarded as a peculiar acid, and to which he gave the name of "eriodictyonic acid." This was obtained by treating an alcoholic extract of the plant with boiling water, when it was observed that, on cooling, a green resinous substance separated, together with a light-yellow, crystalline precipitate which was soluble in a dilute solution of potassium hydroxide with a red-brown color. This latter substance, the so-called eriodictyonic acid, is said to be contained in the plant to the extent of 2.4 per cent., and has been described as forming delicate yellow plates, with a dull lustre, which melt at 86–88° C., readily attract moisture from the air, are neutral, and possess a sweet acidulous taste. On exposure to the air it gradually becomes colored red. No analyses of this substance are recorded in the paper (*loc. cit.*), but it was stated to possess the formula $C_{14}H_{18}O_5$, and considered probable that it could be regarded as a substituted phloroglucin, of the composition $C_6H_3(OC_4H_7O)_2OH$. Its characters were further described by Quirini as follows: "With concentrated sulphuric acid it gave a slight reddish-yellow color, which soon disappeared. The yellowish alcoholic solution was readily decolorized by stannous chloride, and the hydrophloroglucin thus produced, when extracted with ether, was obtained on evaporation of the solution as a colorless mass, which was insoluble in water. By treatment with ferric chloride this could again be readily oxidized to phloroglucin. In alcoholic solution the so-called eriodictyonic acid gave with aniline a handsome emerald-green compound, which dissolved in concentrated sulphuric acid with a blue color."

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* Amer. Journn. Pharm., 1887, *59*, p. 225.

† Zeit. d. Oest. Apoth. Ver., 1887, p. 404, and 1888, p. 159. Abstracted in Proc. A. Ph. A., 1888, *36*, p. 539.

The foregoing extracts from the existing literature are believed to afford a comprehensive survey of all the information which has hitherto been recorded respecting the constituents of eriodictyon leaves. The statements concerning the character of these constituents have been duly considered in connection with the results of the present investigation, and it is obvious that many of them require considerable modification. On the other hand, our more extended study of the subject has revealed a number of new substances of chemical interest, which have been definitely characterized.

EXPERIMENTAL.

For the purpose of this investigation a quantity of the leaves of *Eriodictyon californicum* was specially collected for us in September, 1902. The locality from which the plant was obtained was Table Mountain, near Middletown, Lake Co., California, where it occurs in great abundance. This locality is in the inner coast range of Western Middle California, and has an altitude of about 1400 feet above the sea.

Test for Alkaloid.—As a preliminary test, 10 Gm. of the finely-ground leaves were extracted with Prollius' fluid, the resulting liquid evaporated, and the residue treated with acidulated water. The filtered, aqueous liquid was then tested with the usual alkaloidal reagents, but with a perfectly negative result.

Preliminary Extraction with Different Solvents.—In order to ascertain the general character of the constituents of the drug, 50 Gm. of the ground, air-dry leaves were successively extracted in a Soxhlet apparatus with the following solvents, and the resulting extracts dried at 100° C. until of constant weight.

Petroleum (b. p. 35—45° C.)	extracted	2.02	per cent.
Ether	"	18.26	"
Chloroform	"	1.38	"
Ethyl Acetate	"	2.04	"
Alcohol	"	3.72	"
	Total	27.42	"

The petroleum extract was a dark-green, fatty solid; the ether and chloroform extracts were of a resinous character, and also possessed a dark-green color; the portion removed by ethyl acetate was similar to the two preceding extracts, but of a somewhat lighter color; the alcohol extract was a dark-brown, syrupy mass. No crystals could be observed in any of these products. The dried marc was subsequently extracted with boiling water, and the liquid thus obtained, which possessed a slightly bitter taste, was found to give a dark-green coloration with ferric chloride and a dense yellow precipitate with basic lead acetate; it apparently contained a little tannin, together with gum and coloring matter.

For the purpose of a complete examination, 96 pounds (43545 Gm.) of the air-dried eriodictyon leaves were thoroughly extracted by continuous percolation with hot alcohol. After the removal of the greater portion of the alcohol, 44¾ pounds (20298 Gm.) of a thick, dark-green extract were obtained, corresponding to 46.6 per cent. of the weight of the leaves.

1000 Gm. of the alcoholic extract just mentioned were brought into a large flask, some water added, and steam then passed through the mixture until the entire amount of volatile substances present had been removed.

Examination of the Steam Distillate.

This liquid had an acid reaction, and contained a small amount of an *essential oil.* It was extracted three times with ether, the ethereal liquid washed, dried with anhydrous sodium sulphate, and the ether removed. The residue was a mobile, yellow oil, which possessed the characteristic odor of the drug. The amount obtained was 2.25 Gm., corresponding to 0.1 per cent. of the weight of air-dried leaves. It was distilled under atmospheric pressure, when it boiled between about 150 and 245° C., the greater portion, however, passing over below 190° C. This essential oil was readily soluble in 70 per cent. alcohol, and had the following constants: $d = 0.9372$ at 15°/15° C. and $a_D = -0^\circ.24'$ in a 25 Mm. tube.

The acids contained in the aqueous distillate from which the essential oil had been removed were converted into their barium salts for the purpose of identification. They were thus found to consist of *formic* and *acetic acids,* the former preponderating.

Non-volatile Constituents of the Alcoholic Extract.

After the removal of the volatile constituents, by distillation in steam, as above described, the contents of the distilling flask consisted of a brown, aqueous liquid and a large cake of soft, green resin, which had separated at the bottom. The aqueous liquid was decanted while hot, and, after adding a further quantity of water to the residual resin, steam was again passed into the mixture until it became heated to the boiling-point. The flask was then placed in a bath of boiling water, and, after the green resin had been allowed to settle, the supernatant, aqueous liquid was decanted as before. This contained a small quantity of a semi-solid, bright yellow substance in a state of fine division, together with a small amount of the green resin. A further quantity of water was subsequently added to the resin, and the preceding oparation repeated.

The first aqueous liquid which had been decanted from the resin, as above described, was allowed to cool, when it deposited a quantity of the same semi-solid, bright yellow substance as was contained in the liquids from the subsequent washings of the resin. All these aqueous liquids were allowed to stand for some time, when the substance in suspension gradually subsided to the bottom of the vessel. The clear portion of the liquid was then decanted, and the remainder separated as completely as possible from the precipitate by filtration. In this manner the following products were obtained: A clear, brown, aqueous liquid (A); a quantity of a sliny, semi-solid, bright yellow substance (B), which contained a few particles of green resin, and the previously mentioned large cake of green resinous matter (C).

Examination of the Aqueous Liquid (A).

This clear, aqueous liquid was concentrated to a small bulk on a water-bath, but, on cooling, nothing further separated. It was then repeatedly extracted with ether until nothing more was removed, and the ethereal liquid, after being washed with a little water, shaken with successive portions of a saturated solution of sodium carbonate. The alkaline liquid obtained by treatment with the first portion of carbonate solution (about 30 Cc.) was clear and of a brown color. This was acidified with sulphuric acid, and extracted with ether, the ethereal liquid being subsequently washed, dried, and the ether removed. Several grams of a deep yellow, sticky, varnish-like substance, possessing a strong sour smell, were thus obtained, but nothing of a crystalline character could be separated from it. The second and third extractions of the original ethereal liquid with sodium carbonate solution afforded intensely yellow liquids, containing a considerable quantity of a crystalline substance in suspension, which will subsequently be described. As these two aqueous, alkaline liquids appeared to be similar in character, they were mixed and filtered for the purpose of further examination.

Isolation of a New Phenolic Substance, Eriodictyol, $C_{15}H_{12}O_6$.

The clear alkaline filtrate from the above-mentioned crystalline substance was at first of a deep yellow color, but rapidly became brown, which was apparently due to the absorption of atmospheric oxygen. It was at once acidified with sulphuric acid, extracted several times with ether, and the ethereal liquid washed, dried, and evaporated. Before all the ether had been removed, the contents of the flask became for the most part solid, and apparently crystalline. The solid thus obtained was first drained on a porous tile, and, after having been freed from a small amount of a bright yellow, varnish-like substance by washing with warm ether, it was obtained in the form of a brown powder. This substance was dissolved in hot alcohol, the solution boiled with animal charcoal, filtered, and concentrated on a water-bath, when the greater portion separated in small, glistening spangles of a light fawn color. After being collected on a filter, and dried, it was found to melt, with decomposition, between 260 and 270° C. When crystallized from glacial acetic acid, it was obtained in the form of small, fawn-colored plates, which darkened and melted to a red liquid at 267° C.

0.1100 gave 0.2529 CO_2 and 0.0422 H_2O. $C = 62.7$; $H = 4.3$.

0.1170 gave 0.2672 CO_2 and 0.0456 H_2O. $C = 62.3$; $H = 4.3$.

A portion of the substance was then recrystallized from boiling alcohol, when the melting-point remained unaltered. It was again analyzed with the following result:

0.0974 gave 0.2231 CO_2 and 0.0385 H_2O. $C = 62.5$; $H = 4.4$.

$C_{15}H_{12}O_6$ requires $C = 62.5$; $H = 4.2$ per cent.

This substance is not identical with any compound hitherto described, and as its properties indicate that it is of a phenolic nature, and not a true acid, it is proposed to designate it *eriodictyol.*

Eriodictyol is moderately soluble in hot alcohol and in acetic acid, very sparingly soluble in boiling water, and insoluble, or very sparingly soluble, in the other organic solvents. It dissolves readily in the fixed alkalies and alkali carbonates, affording at first almost colorless solutions, but which rapidly absorb oxygen and assume a deep brown color. When to a dilute solution of eriodictyol in water or in dilute alcohol a drop of ferric chloride solution is added, a deep greenish-brown color is produced, which rapidly changes to a pure brown. A saturated aqueous solution of eriodictyol does not reduce Fehling's solution, and is not appreciably precipitated by a solution of normal lead acetate, but with basic lead acetate it affords a bulky, yellow precipitate.

Acetyl Eriodictyol.—A small quantity of eriodictyol was dissolved in an excess of hot acetic anhydride, and the mixture boiled for six hours. The greater part of the anhydride was then removed by distillation, and a small quantity of alcohol added, when, after standing for some time, a solid substance separated. This was collected on a filter, and recrystallized from ethyl acetate, when it was obtained in small tufts of minute, nearly colorless needles, which melted at 195–196° C.

The amount of eriodictyol obtained from 1000 Gm. of the alcoholic extract of the drug was about 5 Gm., which corresponds to 0.23 per cent. of the weight of air-dried leaves.

Isolation of Homo-Eriodictyol, $C_{16}H_{14}O_6$.

The crystalline substance separated by filtration from the aqueous alkaline liquid which afforded the eriodictyol, as previously described, was spread on a porous plate and allowed to dry. As thus obtained, it dissolved with moderate facility in boiling water, and, on cooling the solution, it separated in glistening, leaf-like crystals, possessing a beautiful silky lustre. After several recrystallizations from water, it was obtained perfectly white, and was evidently the sodium derivative of some organic substance of an acidic nature. The aqueous solution of this compound had a faintly alkaline reaction and a slightly yellow color, which was much intensified on the addition of an excess of alkali.

A quantity of the above-mentioned sodium derivative was dissolved in hot water, dilute acetic acid added so long as a precipitate was produced, and the liquid allowed to cool. The pale-yellow, crystalline substance which separated was collected on a filter, washed with water, and dried, when it melted at 223° C. This substance was subsequently dissolved in boiling 70 per cent. acetic acid, when, on cooling, it separated from the solution in handsome, lemon-yellow plates, which were likewise collected on a filter, washed with water, and dried. As its melting-point remained unchanged after this treatment, it apparently represented a pure substance. It was analyzed with the following result:

0.0977 gave 0.2267 CO_2 and 0.0424 H_2O. $C=63.3$; $H=4.8$.

0.1156 gave 0.2686 CO_2 and 0.0493 H_2O. $C=63.4$; $H=4.7$.

$C_{16}H_{14}O_6$ requires $C=63.5$; $H=4.6$ per cent.

A portion of this substance was dissolved by boiling with water and sodium bicarbonate, and the solution cooled. The crystalline sodium derivative which separated was collected on a filter, washed with water, and allowed to dry in the air.

0.1794 of the air-dried sodium derivative, when heated at 115° C. until of constant weight, lost 0.0361 or 20.1 per cent.

$C_{16}H_{13}O_6 Na,5H_2O$ requires $H_2O=21.7$ per cent.

0.1433 of the anhydrous compound gave on ignition 0.0238 Na_2CO_3. $Na=7.2$.

$C_{16}H_{13}O_6 Na$ requires $Na=7.1$ per cent.

The fact that the sodium compound effloresces slightly on exposure to the air, would account for the somewhat low percentage of water found.

From the above analytical results it is evident that the substance melting at 223° C. is correctly represented by the formula $C_{16}H_{14}O_6$. The only known substance of this formula which has properties at all agreeing with those of the substance just described is hesperitin, which melts at 226° C. Although the melting-points of these two compounds are almost identical, there are other important differences which lead to the conclusion that the substance which we have isolated from eriodictyon, having the melting-point of 223° C., is not hesperitin, but an isomeric compound of a similar type. The differences referred to may be summarized as follows: Hesperitin has been described as crystallizing in almost colorless needles, which possess an intensely sweet taste, and dissolve in alkalies with, at the most, a faintly yellow color.* The compound from eriodictyon, on the other hand, crystallizes in pale yellow plates, which have only a slightly sweetish taste, and dissolve in alkalies with a bright yellow color. Furthermore, hesperitin affords a sodium derivative of the formula $C_{16}H_{13}O_6Na.C_{16}H_{14}O_6$,† whereas the sodium derivative of the compound from eriodictyon, when prepared under the same conditions, has been shown to have the normal formula $C_{16}H_{13}O_6Na$. As the formula of the compound melting at 223° C. differs by the increment of CH_2 from that of the other newly isolated substance, eriodictyol, it is proposed to designate it *homo-eriodictyol.*

Homo-eriodictyol resembles eriodictyol in solubility, but it is even more sparingly soluble in water than the latter, and apparently more readily soluble in alcohol and in acetic acid.

When to a dilute alcoholic solution of homo-eriodictyol a drop of ferric chloride solution is added, an intense red-brown color is produced. An aqueous solution of homo-eriodictyol is not appreciably precipitated by either normal or basic lead acetate solution. Acetyl and benzoyl homo-eriodictyol were prepared, but all the attempts to obtain these compounds in a crystalline condition were unsuccessful.

A considerable amount of homo-eriodictyol was also obtained from other products of the drug, as will subsequently be noted. The total yield of this substance from 1000 Gm. of the original alcoholic extract was about 65 Gm., which corresponds to 3 per cent. of the weight of air-dried leaves.

The ethereal liquid from which the eriodictyol and homo-eriodictyol had been extracted by sodium carbonate solution was subsequently shaken with further quantities of the alkali until nothing more was removed, and it was then found that practically nothing remained dissolved in the ether. The alkaline liquids from these final extractions with sodium carbonate solution were acidified, and shaken out with ether in the usual manner, but they only afforded a small amount of uncrystallizable resinous matter.

The aqueous liquid (A), from which the mixture of the above-described products had been removed by shaking with ether, had a brown color, and afforded a voluminous precipitate of a bright yellow color on the addition of a solution of basic lead acetate. A slight excess of the latter was therefore added, the resulting precipitate collected by filtration under pressure, washed with a little water, then suspended in water, and completely decomposed by hydrogen sulphide. The liquid containing lead sulphide was then heated to the boiling-point, filtered, and the filtrate concentrated on a water-bath to a small bulk, when a very dark brown, thick liquid was obtained. This liquid readily reduced Fehling's solution, gave an abundant green-black precipitate with ferric chloride, and an intense yellowish-brown color with alkalies. It apparently contained a considerable amount of tannin, but nothing crystalline.

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* Journ. Chem. Soc., 1898, *73*, p. 1032. † *Ibid*, 1898, *73*, p. 1037.

The filtrate from the precipitate produced by basic lead acetate was deprived of lead by hydrogen sulphide, filtered, and the filtrate concentrated on a water-bath to a small bulk. The clear syrupy liquid thus obtained had a yellowish-brown color, and contained a large amount of *glucose*, for a portion of it when treated with a solution of phenylhydrazine acetate readily yielded a crystalline osazone melting at 205° C. Nothing crystalline separated from this liquid, even after standing for several weeks.

It has been stated by Thal * that eriodictyon contains the glucoside "ericolin," and indeed in such an amount that an extract from five small leaves of the plant, when heated with a few drops of dilute sulphuric acid, not only developed an exceptionally strong odor of its hydrolytic product "ericinol," but that "an oily layer of ericinol appeared on the surface of the liquid, which could be detected even with the naked eye." This, however, is followed by the significant remark that "as he experienced much difficulty in his investigations on account of the readiness with which the ericolin became decomposed, he cannot regard them as exhaustive, and must admit that they are possibly not free from errors."

Notwithstanding the extremely unsatisfactory character of the evidence which has been adduced for the existence of the so-called "ericolin" in eriodictyon, and the equally indefinite chemical character of ericolin itself, it was considered of interest to ascertain whether the above-mentioned aqueous liquid, when heated with dilute sulphuric acid, was capable of yielding anything corresponding to the hydrolytic product of ericolin, which, under the name of "ericinol," has been described as a volatile, colorless, oily liquid, possessing a peculiar not unpleasant odor, and becoming dark brown on exposure to the air. Accordingly, about one-third of the purified, concentrated aqueous liquid, obtained as above described, was diluted with water, and such an amount of sulphuric acid added as to correspond to about 5 per cent. of the weight of liquid employed. This mixture was first boiled for 5 hours in a flask provided with a reflux condenser, when a quantity of black, resinous matter separated. Steam was then passed through the liquid until all volatile substances were completely removed, when a clear distillate, having an acid reaction and an odor recalling that of furfural, was obtained. The distillate was repeatedly extracted with ether, the ethereal liquid washed, dried, and the ether removed. The residue consisted of a few drops of a clear liquid, which contained a little acetic acid, and had an odor suggestive of furfural. With aniline it instantly afforded the intense carmine-red color which is characteristic of furfural when brought in contact with this base.* It also afforded an immediate precipitate with phenylhydrazine acetate. This odorous volatile substance therefore appeared to consist essentially of *furfural*, which was doubtless produced by the action of the sulphuric acid on the carbohydrates contained in the liquid.

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* Pharm. Zeit. für Russland, 1883, xxii, p. 257.

From the results of the preceding experiment it appears highly probable that the peculiar odor observed by Thal, and attributed by him, as well as by previous investigators, to the so-called "ericinol," was really due to furfural, which would obviously be produced from a great variety of plant extracts when heated with a dilute mineral acid. The fact that "ericolin" has never been obtained in any other form than an amorphous, brown powder or a sticky extract, in which even the complete absence of sugar does not seem to have been proved, and that its assumed product of hydrolysis, "ericinol," has apparently never been chemically characterized or submitted to analysis, lends further support to the view that no definite glucoside is known to exist which is entitled to the specific designation of ericolin. It is certain that there is at present no known constituent of eriodictyon leaves to which this name should be applied.

The liquid from which the furfural had been removed by distillation was of a brown color, and contained about 20 Gm. of a hard, black resin. This was found to be insoluble in the usual organic solvents, but dissolved slowly in alkalis, and appeared to contain nothing crystalline. The clear aqueous liquid from which the resin had been separated was repeatedly extracted with ether, but this removed only a trace of a brown-colored syrup. The sulphuric acid contained in the aqueous liquid was then removed by means of barium hydroxide and filtering, and from the sugar contained in the filtrate an osazone was prepared. As the latter melted at 206° C., it was evidently glucosazone, and indicated that by the treatment with sulphuric acid no appreciable amount of a sugar had been formed which differed from that contained in the original aqueous liquid.

Examination of the Yellow Substance (*B*).

This substance consisted of a slimy mass of apparently semi-solid particles possessing a bright yellow color, together with a little green resinous matter, and amounted to about 10–15 Gm. It was very sparingly soluble in hot, and insoluble in cold water, and could not be crystallized from any solvent. As it evidently represented a mixture of substances it was dissolved in ether, and the ethereal solution, after being washed with water, extracted with successive portions of sodium carbonate solution, in the same manner as described in the treatment of the ethereal extract of the aqueous liquid (*A*). By this means the substance was found to consist, to a large extent, of homo-eriodictyol, which separated in the form of its mono-sodium compound, together with a trace of eriodictyol, a small amount of a brown and a green resinous substance, both of an acidic nature, and several grams of a green resin, which was insoluble in sodium carbonate solution.

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* Ber. d. deutsch. chem. Ges., 1887, *20*, p. 541.

It has already been noted that some years ago Quirini (*loc. cit.*) obtained from eriodictyon a substance to which he gave the name of "eriodictyonic acid." Although this was described as forming yellow plates, which melt at 86–88° C., it was evidently a mixture, as from its method of preparation it must have consisted to a large extent of homo-eriodictyol, which melts at 223° C.

Examination of the Resins (*C*).

The cake of soft, dark-green, resinous matter, which had been separated from the aqueous liquid subsequent to the steam distillation, as previously described, was heated on a water-bath until dry, when it weighed 627 Gm., corresponding to 29.2 per cent. of the weight of air-dried leaves. It was then intimately mixed with prepared sawdust, and successively extracted in a Soxhlet apparatus with the following solvents. The extracts thus obtained were dried at 100° C., until of constant weight.

I. Petroleum (b. p. 35–45° C.)	extracted	5.54	per cent.
II. Ether	"	75.24	"
III. Chloroform	"	6.16	"
IV. Ethyl Acetate	"	7.82	"
V. Alcohol	"	3.90	"
	Total	98.66	"

I. *Petroleum Extract of the Resins.*

This was a soft, fatty solid, of a dark greenish color, and amounted to 34.7 Gm. When heated, it melted to a clear, dark green oil. It was dissolved in about 500 cc. of boiling ether, and the solution cooled by immersing the flask in cold water. Several grams of a solid substance then separated, which was removed by filtration, washed with cold ether, and allowed to dry, when it was obtained as a pale greenish, amorphous powder. When heated, it melted at 70–75° C., and, on re-solidifying formed a mass resembling paraffin and having the properties of a hydrocarbon. The whole of the substance was then brought into a distilling flask, and distilled under a pressure of 8 Mm., when a clear distillate was obtained, which, on cooling, solidified to a crystalline mass. It was subsequently crystallized from ethyl acetate, when it was obtained in small, colorless plates, which, after drying, melted at 74.5–75° C. On analysis it gave the following result:

0.1564 gave 0.4858 CO_2 and 0.2071 H_2O. $C = 84.7$; $H = 14.7$.

$C_{35}H_{72}$ requires $C = 85.4$; $H = 14.6$ per cent.

The substance was thus identified as *pentatriacontane*, which had previously been isolated by the authors from *Aethusa Cynapium*, Linn.*

The ethereal solution of the petroleum extract, from which the pentatriacontane had been separated by filtration, was then shaken with sodium carbonate solution. This caused the precipitation of an amorphous, pale green substance, which was separated from the ethereal solution, together with the alkaline, aqueous liquid. It was removed from the alkaline liquid by filtration, washed first with ether, then with water, and dried on a tile. As thus obtained, it had the appearance of a dried soap, contaminated with a little resinous matter. It was then dissolved in hot, dilute alcohol, the solution acidified with sulphuric acid, and the mixture cooled and extracted with ether. The ethereal liquid, which had a green color, was washed with water, dried, and the ether removed. The residue thus obtained was dissolved in hot ethyl acetate, and the solution allowed to cool, when a substance of a pale green color separated in the form of nodules, which possessed no definite crystalline form. This solid was collected on a filter, washed with ethyl acetate, and dried, when it melted at 78° C. Although its sharp melting-point indicated that it was a fairly pure substance, it would not separate in a crystalline condition from any solvent, and it was therefore distilled under diminished pressure. A distillate was thus obtained which, after dissolving in hot ethyl acetate, and allowing the solution to cool, yielded the substance in the form of glistening plates. These were removed by filtration, and dried, when they melted at 79° C.

0.0749 gave 0.2167 CO_2 and 0.0923 H_2O. $C = 78.9$; $H = 13.6$.

$C_{27}H_{54}O_2$ requires $C = 79.0$; $H = 13.2$ per cent.

The properties and analysis of this substance confirmed its identity with *cerotic acid*, which existed in the leaves in a free state.

The substance contained in the original ethyl acetate mother liquors from this cerotic acid was distilled under diminished pressure, when it afforded a distillate which, after several recrystallizations from ethyl acetate, melted between 71 and 74° C., and was apparently a mixture of acids. The alkaline aqueous liquid from which the sodium salts of the above-mentioned acids had been separated by filtration was found to contain no fatty acids.

The ethereal solution of the petroleum extract, from which the pentatriacontane had been obtained, and which had been freed from acids by shaking with sodium carbonate solution, was found to contain nothing soluble in dilute mineral acids. The ether was therefore removed, and the residue hydrolysed by boiling it for 3 hours with an alcoholic solution of 20 Gm. of potassium hydroxide, when it was observed that a small amount of ammonia was evolved. The alcohol was then removed, the residue poured into water, and the mixture repeatedly extracted with ether. The ethereal liquid, after being washed and dried, was concentrated to about 100 Cc., and allowed to cool, when a considerable quantity of a crystalline substance separated. This was collected on a filter, then distilled under a pressure of 10 Mm., and the distilled product crystallized from ethyl acetate, when it was obtained in the form of extremely handsome, colorless plates. These crystals, after being dried on a tile, melted sharply at 65.2° C., and this melting point was not altered by further recrystallization.

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* Journ. Amer. Chem. Soc. 1905. *27*, p. 1468.

0.0998 gave 0.3110 CO_2 and 0.1311 H_2O. $C=85.0$; $H=14.6$.

$C_{30}H_{62}$ requires $C=85.3$; $H=14.7$ per cent.

This substance is obviously a hydrocarbon. As its melting-point lies between that of nonacosane, $C_{29}H_{60}$ (m. p. 63.5—64° C.), and hentriacontane, $C_{31}H_{64}$ (m. p. 68.1° C.), and as it also differs in appearance from the latter, it is probable that it is *triacontane*, $C_{30}H_{62}$. If this supposition be correct, it is apparently the first time that this hydrocarbon has been obtained from any source.

The substance contained in the ethereal mother-liquors from this hydrocarbon was fractionally distilled under 10 Mm. pressure, when the lower boiling portion, on fractional crystallization, yielded a further quantity of triacontane, together with a very small amount of a substance melting at 136–137° C., which afforded the color reaction characteristic of the *phytosterols*. The fraction of higher boiling-point yielded a substance which melted between 66 and 68° C., and was apparently a mixture of triacontane and pentatriacontane. The total amount obtained of these hydrocarbons was about 15 Gm., which corresponds to 0.7 per cent. of the weight of air-dried leaves.

The alkaline, aqueous liquid from which these neutral substances had been removed by means of ether contained a small amount of a sparingly soluble potassium salt in the form of a flocculent precipitate. This was removed by filtration and decomposed by sulphuric acid. The liberated acid was first distilled under diminished pressure, and then crystallized from ethyl acetate, when it was found to be identical with the cerotic acid previously obtained. The filtrate from this potassium cerotate was acidified with sulphuric acid and distilled in steam. The distillate contained no oily drops, but had an acid reaction, and was found to contain both *formic* and *butyric acids*, which were identified by means of their barium salts. The non-volatile acids contained in the steam distillation flask were extracted by ether. On evaporating the ethereal solution a dark green, sticky residue was obtained, which was redissolved in a small quantity of warm ether, a large volume of warm, light petroleum added, the mixture well stirred, and the clear liquid decanted from a soft, dark green resin which was only sparingly soluble in light petroleum. The petroleum was removed from this liquid, the residue distilled under diminished pressure, and the distillate fractionally crystallized from ethyl acetate, when it yielded cerotic acid, a mixture of acids melting between 62 and 66° C., and a small amount of an unsaturated oily acid, which was apparently oleic acid. The total amount of fatty acids obtained from the original petroleum extract was about 10 Gm.

II. *Ether Extract of the Resins.*

This was a nearly hard, dark green resin, and amounted to 472 Gm. It was dissolved in about 2 liters of ether, and the solution extracted with several successive portions of a solution of sodium carbonate, followed by a 10 per cent. solution of potassium hydroxide, when the following products were obtained.

The first few extractions with sodium carbonate afforded a rather thick, dark green liquid (*a*), containing a large amount of a crystalline substance in suspension, which proved to be mono-sodium homo-eriodictyol. The next portions of sodium carbonate afforded a further quantity of mono-sodium homo-eriodictyol, together with an intensely yellow liquid (*b*). The treatment with sodium carbonate was then continued until nothing further was removed from the liquids, when no more mono-sodium homo-eriodictyol separated, but a clear, greenish-brown liquid (*c*) was obtained. The ethereal liquid was then washed with water, which removed a further quantity of a substance that imparted a dark greenish-brown color to the aqueous liquid (*d*). As the ethereal liquid still possessed a very dark green color, although now free from substances of an acidic nature, it was extracted with a 10 per cent. aqueous solution of potassium hydroxide which afforded a deep green, alkaline liquid (*e*). After washing the ethereal liquid, which was still colored, and which contained nothing soluble in 20 per cent. sulphuric acid, it was dried, and the ether removed. It then finally yielded a quantity of a soft, green solid (*f*).

The above-described treatment of the ether extract of the resins showed it to be an extremely complex mixture, and as all the products thus obtained evidently differed in character, they were separately examined.

(*a*) This liquid, from which the crystalline mono-sodium homo-eriodictyol held in suspension had been removed by filtration, was acidified with sulphuric acid, and extracted with ether in the usual manner. By this means the following products were obtained: (1) A small amount of a black resin, insoluble in ether; and (2) a large amount of a soft, green, resin, readily soluble in ether, which evidently represented the principal constituent of the ether extract of the resins (*C*). As there was no evidence of any crystalline substance in this soft, green resin, it seemed of interest to ascertain whether it was of a glucosidal nature. A portion of it was accordingly dissolved in alcohol, a little of water added, and subsequently an amount of sulphuric acid corresponding to about 5 per cent. of the weight of liquid employed. This mixture was boiled for five hours, after which the alcohol was removed, and the residue submitted to steam distillation, but no volatile products were obtained. The liquid contained in the steam distillation flask was then filtered from the apparantly unchanged resin, and extracted with ether, but this removed only a trace of substance. The aqueous liquid was finally freed from sulphuric acid by means of barium hydroxide, filtered and concentrated, when it yielded nothing but a small amount of crystalline barium ethyl sulphate, which was doubtless produced by the action of the sulphuric acid on the alcohol employed. The chief constituent of the ether extract of the resins was therefore not a glucoside.

Isolation of a new yellow, crystalline substance, $C_{16}H_{12}O_6$.

(*b*). This intensely yellow liquid was acidified with sulphuric acid, and extracted with ether in the manner previously described. The ethereal liquid afforded a small amount of a yellow varnish, which was dissolved in ethyl acetate and allowed to stand. In the course of a few days, bright yellow, crystalline crusts were deposited, which were removed by filtration, and washed with ethyl acetate. The substance thus obtained was dissolved in a large quantity of boiling alcohol, the solution filtered, and concentrated to a small bulk, when minute, glistening spangles of a deep golden-yellow color separated from the boiling liquid. This substance, which appeared to be homogeneous, was collected on a filter, washed with alcohol, dried, and analyzed.

0.0895 gave 0.2092 CO_2 and 0.0330 H_2O. $C = 63.75$; $H = 4.08$.

The remainder of the compound was then recrystallized from alcohol, and again analyzed.

0.0873 gave 0.2050 CO_2 and 0.0328 H_2O. $C = 64.04$; $H = 4.17$.

$C_{16}H_{12}O_6$ requires $C = 64.00$; $H = 4.00$ per cent.

This substance did not melt when heated to 337° C., but from its appearance and the analytical results it was evidently pure. As it is not identical with any compound hitherto described, it must be regarded as a new substance. It was very sparingly soluble in alcohol and in ethyl acetate, and apparently insoluble in the other ordinary solvents, but it dissolved in alkalies and in concentrated sulphuric acid, yielding solutions of a bright yellow color.

Acetyl Derivative of the Yellow Substance.—A small quantity of the yellow, crystalline substance was dissolved in hot acetic anhydride, and the solution boiled for one hour. After cooling, a considerable volume of water was added, and the mixture allowed to stand for several hours, when a colorless, crystalline substance separated in tufts of needles. This was collected on a filter, and, after recrystallization from a mixture of ethyl acetate and alcohol, it melted at 213–215° C. As the total amount of the yellow substance obtained was only about 0.3 Gm., it could not be subjected to further study.

It has already been noted that a considerable amount of mono-sodium homo-eriodictyol separated from the liquids (*a*) and (*b*), and it was from this source that the greater portion of the homo-eriodictyol was obtained.

(*c*), (*d*), and (*e*). These liquids were acidified with sulphuric acid and extracted with ether, as before described. (*c*) and (*d*) each afforded about 10 Gm. of a greenish-brown resin, while (*e*) yielded about 20 Gm. of a bright green resin, but from none of these products could anything crystalline be obtained.

(*f*). This substance, as previously indicated, represented that portion of the ether extract of the resins which was not dissolved by shaking the ethereal solution successively with solutions of sodium carbonate and potassium hydroxide. In appearance it resembled the petroleum extract of the resins, and was found to contain some of the hydrocarbons and other constituents of that extract which had not been completely removed by the treatment with petroleum, but no other crystalline substance could be isolated from it.

III. *Chloroform Extract of the Resins.*

This was a hard, greenish resin, and amounted to about 39 Gm. A portion of it was dissolved in amyl alcohol, and the liquid extracted with sodium carbonate solution, when the greater part of the resin was taken up by the alkali, yielding a solution of a bright yellow color and a small amount of a brown, sparingly soluble sodium compound. Nothing crystalline could be obtained from these products.

IV. *Ethyl Acetate Extract of the Resins.*

This was a very soft, dark brown resin, and amounted to about 49 Gm. It was not entirely soluble in sodium carbonate solution, and was evidently a complex mixture of substances. The only crystalline product that could be obtained from it was a small amount of homo-eriodictyol.

V. *Alcohol Extract of the Resins.*

This was a thick, dark brown, tarry liquid, and amounted to about 24 Gm. It was entirely soluble in sodium carbonate solution, but was evidently a mixture of substances, and contained nothing crystalline.

Summary and Conclusions.

The results of this investigation have shown the leaves of *Eriodictyon californicum* to contain, in addition to some essential oil, resins, and other amorphous bodies, the following substances, in the amounts approximately indicated:

Tricontane, $C_{30}H_{62}$ (m. p. 65.2° C.) $\rbrace$ about 0.7 per cent.
Pentatriacontane, $C_{35}H_{72}$ (m. p. 74.5–75° C.) $\rbrace$ about 0.7 per cent.
Formic, acetic, cerotic, and other acids, in a free state.

Glycerides of formic, butyric, cerotic, and other acids.

The total amount of acids, free and combined, amounted to about 0.5 per cent.

A Phytosterol (m. p. 136–137° C.), in very small amount.

Eriodictyol, $C_{15}H_{12}O_6$ (m. p. 267° C.), a new, crystalline substance of phenolic nature, about 0.23 per cent.

Homo-eriodictyol, $C_{16}H_{14}O_6$ (m. p. 223° C.), another new, crystalline substance of phenolic nature, about 3 per cent.

A new, yellow, crystalline substance, $C_{16}H_{12}O_6$, also of a phenolic nature, about 0.014 per cent.

Glucose (phenylglucosazone, m. p. 205° C.), a considerable amount.

The amount of essential oil obtained corresponded to about 0.1 per per cent. of the weight of the leaves. It was a yellow liquid, which possessed the characteristic odor of the drug, and had the following constants: $d=0.9372$ at 15° 15° C.; $a_D—0° 24'$ in a 25 Mm. tube. It was readily soluble in 70 per cent. alcohol.

The total amount of crude resinous substances was 29.2 per cent. of the weight of the leaves, and about 75 per cent. of these resins was soluble in ether. They represented an exceedingly complex mixture, from which some of the above-mentioned crystalline substances were isolated.

The statememt o f Thal (*loc. cit.*) that Eriodictyon leaves contain the so-called "ericolin," we are not able to confirm. The peculiar odor which he observed on heating an extract of the leaves with dilute sulphuric acid, and which he regarded as characteristic of "ericinol"—the assumed hydrolytic product of ericolin—we believe to have been due to the formation of a small amount of *furfural*. The latter compound has now been definitely identified as the chief volatile product resulting from the action of a dilute mineral acid on a purified extract of Eriodictyon leaves, and is doubtless produced from the carbohydrates contained therein.

The so-called eriodictyonic acid, which was described some years ago by Quirini (*loc. cit.*), was evidently not a pure substance. The method by which it was obtained indicates that it must have consisted, to a large extent, of the new crystalline substance of a phenolic nature which we have designated *homo-eriodictyol.*

In conclusion it may be noted that our investigation of Eriodictyon leaves has disclosed the occurrence, among other compounds, of four substances which have not hitherto been known. It is our intention to continue the chemical study of two of these newly isolated substances, namely, eriodictyol and homo-eriodictyol.

THE BOTANICAL CHARACTERS OF SOME CALIFORNIAN SPECIES OF GRINDELIA.

BY PIERRE ÉLIE FÉLIX PERRÉDÈS, B. SC., F. L. S.
Pharmaceutical Chemist.
[A Contribution from the Wellcome Research Laboratories, London.]

In a paper presented to this Association last year by F. B. Power and F. Tutin, on the "Chemical Examination of Grindelia,"* the authors stated that the material employed by them, having been obtained "directly from California," "was evidently *Grindelia robusta*, one of the varieties of the latter, or a closely related species. The material in question was, in fact, found to conform most closely in its characters to the description of *Grindelia camporum*, Greene."

In a discussion which followed the reading of the paper it was remarked by one of the speakers (Professor Rusby) that the authors had failed "to state the exact species of the grindelia used, and that in California one would meet Grindelia robusta or Grindelia squarrosa, and more likely the latter" (*loc. cit.*, p. 201).

Since the presentation of the above-mentioned paper, I have had an opportunity of submitting a sample of the material used by Power and Tutin to Dr. Willis L. Jepson, author of the "Flora of Western Middle California," and he states that the plant is undoubtedly *G. camporum* as defined by him in the aforesaid work. With regard to Professor Rusby's statement, the fact may be noted that *Grindelia squarrosa*, Dunal (*Donia squarrosa*, Pursh) can hardly be said to occur in California at all. Its distribution is given by Gray in the "Synoptical Flora of North America" (Vol. I, Part II, p. 118) as "Plains and prairies, Minnesota and Saskatchewan to Montana and south to Missouri and Texas, west to Nevada, Arizona, and borders of California (Mex.)," and by Britton and Brown in their "Illustrated Flora of the Northern States and Canada" (Vol. III, p. 321) as "In dry soil, Illinois and Minnesota to Manitoba, south to Missouri, Texas, Nevada and Mexico. Adventive in southern New Jersey." *Grindelia squarrosa*, Dunal, is not mentioned in the "Botany of California," and I, myself, have not seen any undoubted specimen of this species from California, either at the British Museum or at Kew. Dr. Jepson, who has made a life-long study of the Flora of California, also informs me that he has never found it in that State.

The *Grindelia camporum* of Greene, as extended by Jepson in the "Flora of Western Middle California," is the common "gum plant" of California, and I am told by Dr. Jepson that the frequency of its occurrence as compared with that of the next most abundant species, viz., *Grindelia cuneifolia*, Nuttall, is at least as a thousand to one.

Both *G. cuneifolia* and *G. camporum* are now generally acknowledged

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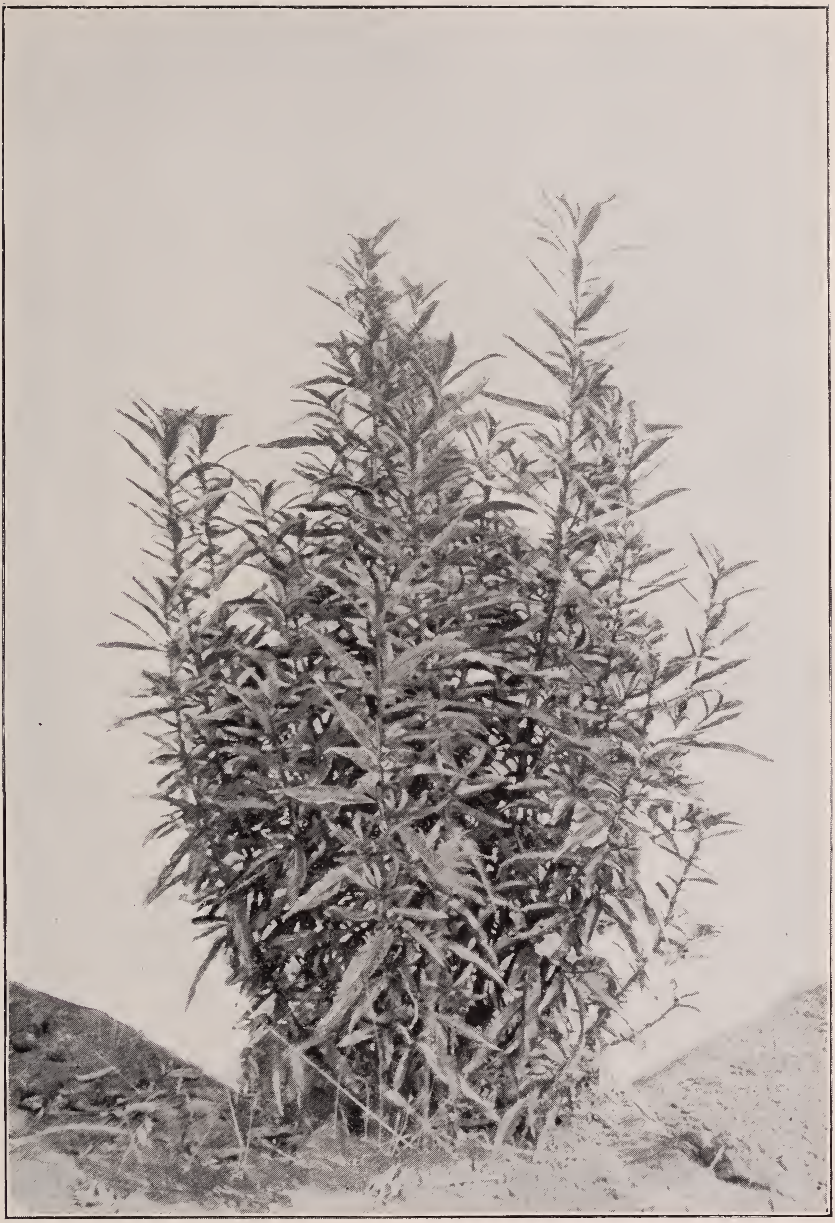
* Proc. A. Ph. A., 1905, *53*, p. 193.



ERIODICTYON CALIFORNICUM (Hooker et Arnott), Greene.
[*Eriodictyon glutinosum*, Bentham.]
Growing on Table Mountain, near Middletown, Lake Co., California

by Californian botanists to be species distinct from *G. robusta*, Nuttall, and they have even been resolved into further species by Professor E. L. Greene; but in the "Botany of California" (vol. i, p. 304), they were considered as varieties of *G. robusta*, the variety *angustifolia* corresponding to *G. cuneifolia*, Nuttall, and the var. (?) *rigida*, corresponding in part, at least, to *G. camporum*. In the "Synoptical Flora," *l. c.*, p. 119, *G. cuneifolia* is again recognized as a distinct species, but the var. *rigida* is merged into *G. robusta*.

Grindelia robusta, as represented by Nuttall's type specimen in the British Museum, is a somewhat rare plant, varieties of it only being recorded in Jepson's "Flora of Western Middle California." As this plant does not appear to have been figured before, I append a sketch which I have drawn myself from Nuttall's type-specimen (see Fig. 1). Nuttall's description is as follows:

"*Grindelia robusta;* herbaceous, smooth; leaves cordate-oblong, obtuse, amplexicaule, coarsely serrate, scabrous on the margin, the upper ones acute, nearly entire; capituli corymbose, involucrum squarrose and leafy at base; receptaculum paleaceous near the margin, pappus of two setæ.

"HAB. St. Pedro, Upper California. Flowering in April. A very stout and robust species, about eighteen inches high, apparently biennial, very smooth; leaves about an inch broad, an inch and a half long. Rays forty to fifty, flowers very large, more than twice the size of those of *G. squarrosa*, which this species much resembles, but the leaves are broadest at the base. Stigma hirsute, pointed, but little exserted."* (Trans. Am. Phil. Soc. N. S. vii (1841), p. 314.)

This plant occurs much too sparingly to be a factor of any importance in the consideration of the drug on the market, but the closely-related *G. camporum* is collected in large quantities. *G. camporum* occurs abundantly in the inner coast ranges, where it has been collected in quantity on the borders of Lake and Napa counties. It is also common in the foot-hills of the Sierra Nevada, and is almost the only plant found on the plains in certain regions of the Sacramento Valley. Curiously enough, although this species is the most frequently collected for the drug market, it is but scantily represented in public herbaria.

The feature which enables one to distinguish *G. camporum* from *G. squarrosa* is found in the *ripe* akenes. This had already been indicated by Asa Gray in the "Botany of California" (Vol. I., p. 303), where it is stated that the western species of *Grindelia* are all different from the eastern, and that "some good characters may be furnished by the ripe akenes, which are known in few species." In the "Synoptical Flora" *G. squarrosa* is placed in the group in which the akenes have no terminal border, and *G. robusta* and *G. cuneifolia* in the one in which all or some of the outer akenes are 1-2 dentate or auriculate-bordered at the summit; the "akenes (at least outer ones)," in *G. robusta*, are stated to be "obliquely auriculate or broadly unidentate at summit," and the "outer akenes," in *G. squarrosa*, "commonly (but not always) corky-thickened and with broad truncate summit, those toward the centre narrower and thinner-walled and with smaller areola." The accuracy of these observations appears to be fully borne out by the material which I have examined. The akenes of the disk in *G. camporum* and *G. cuneifolia* are compressed, and in *G. camporum* they are usually biauriculate (see Fig. 2), or, more rarely, unidentate at the summit, as indicated by Professor Greene in his "Manual of the Botany of the Region of San Francisco Bay" (p. 171); those of *G. squarrosa* are four-angled, and without the distinct auriculate appendages of *G. camporum* (see Figs. 3 and 3A which were drawn by me from one of Drummond's specimens). The conical-urceolate shape of the heads of *G. squarrosa,* which is stated in the U. S. P. to differentiate that species from *G. robusta* (in which the heads are described as depressed-urceolate), does not seem to be a character of much value, judging by the specimens which I have examined; the photographs of undoubtedly authentic *G. squarrosa* reproduced on Plate II. will show that the heads of this species may be very depressed indeed. The evidence afforded by the vegetative characters of such polymorphous species as *G. squarrosa* and most of the western species is also of uncertain diagnostic value, but the upper leaves of *G. camporum* are usually broader relatively to their length than those of *G. squarrosa* (compare Figs. 4 and 4A, which represent average shapes in the former, with Figs. 5 and 5A, which represent the predominating shapes in *G. squarrosa.*) The foliage of *G. camporum* is also usually paler than in *G. squarrosa*, and the leaves are more rigid in the former, as stated under *G. robusta* in the "Synoptical Flora," *l. c.*, p. 119.

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* The leaves of the specimen are darkish-green, but the stem is pale. The akenes are not sufficiently mature to possess their characteristic features.—P. E. F. P.

A possible reason of confusion in connection with the drug of commerce may have arisen from the fact that the terms "Grindelia squarrosa" and "Grindelia robusta" have been loosely applied to the drug by dealers. I was, for instance, informed by a San Francisco dealer that when eastern drug houses required "Grindelia squarrosa" and "Grindelia robusta" to be separately provided, the plant growing in the marshes (*G. cuneifolia*, and its variety *paludosa*) was supplied for "Grindelia robusta," while *G. camporum*, the plant of the dry hills and plains, was supplied for "Grindelia squarrosa." These designations are, to some extent, justified by the facts, inasmuch as *G. cuneifolia*, var. *paludosa*, Jepson, is the largest of all the Grindelias, attaining a height, according to Jepson, of five feet in the Suisun marshes, and hence deserving of the name "*robustissima*," while *G. camporum* is probably as squarrose as any of the Grindelias.

It is interesting to record that Nuttall's type-specimen of *G. cuneifolia*

PLATE I

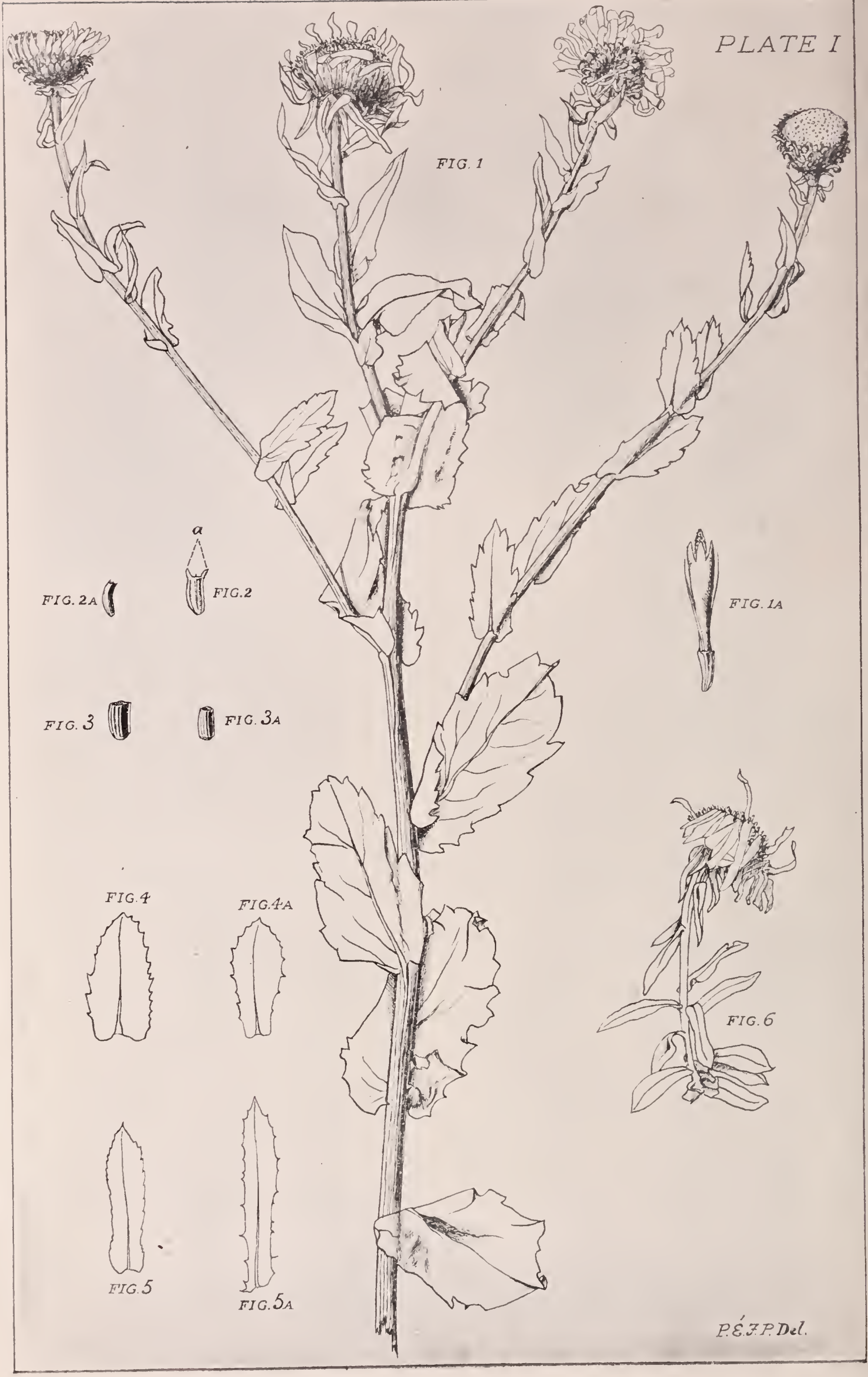
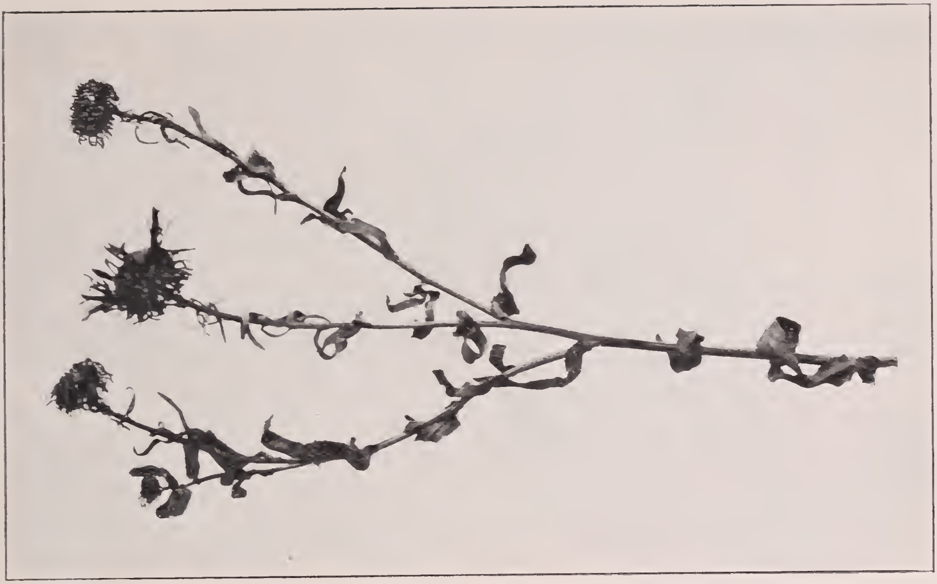
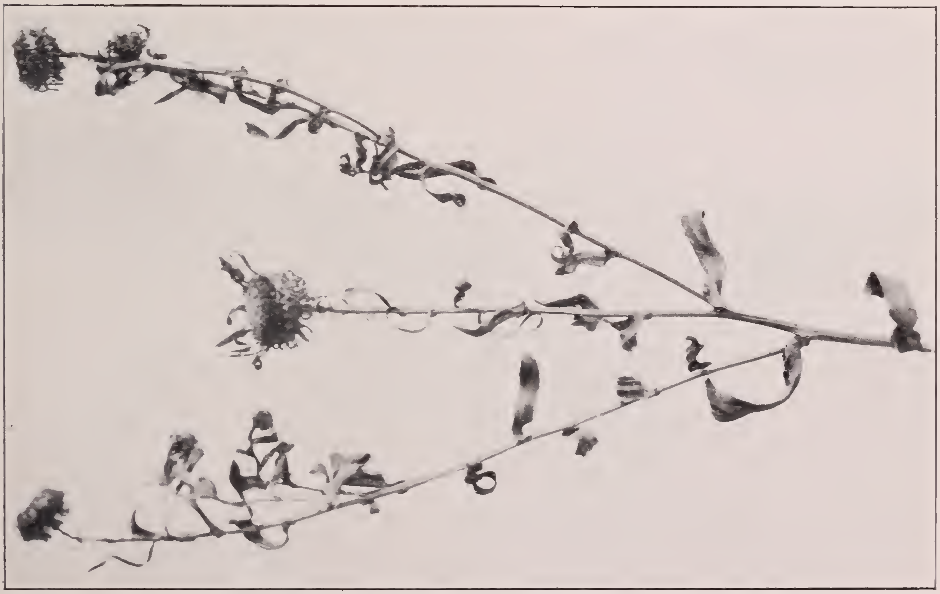


FIG. 1
FIG. 1A
a
FIG. 2A
FIG. 2
FIG. 3
FIG. 3A
FIG. 4
FIG. 4A
FIG. 5
FIG. 5A
FIG. 6
P.É.J.P. Del.





is also in the British Museum. I have accordingly sketched this also (see Fig. 6), as the subject may be of interest to the members of the American Pharmaceutical Association, as well as to botanists generally. Nuttall, from the incompleteness of his specimen, marked his species as dubious, but it has been reinstated by subsequent botanists. Nuttall's description is as follows:—

"*Grindelia cuneifolia*; smooth, leaves entire (?) cuneate-oblong, obtuse or linear-oblong, acute, amplexicaule; capitulum sessile, somewhat glutinous, squarrose; stigmas very long, acute, pubescent.

"HAB. St. Barbara, Upper California. Of this I have seen only two small branches, the lower leaves may be different. The capitulum like that of *G. glutinosa*, of which it is, perhaps, a variety. The stigmas very long and exserted. Leaves pellucidly punctate. Pappus of five or more setæ." (Trans. Am. Phil. Soc. N. S. vii (1841), p. 315.)

G. cuneifolia and its variety *paludosa* are marsh plants. They are not as glutinous as *G. camporum*, and the leaves in addition to their tendency to assume the cuneiform shape, from which the specific name is derived, are darker green than in *G. camporum*, and not so thick; the characters of the akenes are similar.

A portion of a large field at Dartford, Kent, England, was planted with young seedlings of *G. cuneifolia*, and the remainder with seedlings of *G. squarrosa*. These had been raised from authentic "seeds" in each case, the akenes of *G. squarrosa* having been specially procured for us from the vicinity of Manhattan, Kansas, and those of *G. cuneifolia* through the kindness of Professor Willis L. Jepson, of the University of California. The behavior of these two species was consistently and markedly different. The Californian plants all sent up stems in the first year, which flowered sparingly during that year, but abundantly in the next; no radical leaves were produced. The plants of *G. squarrosa*, without exception (and there were some thousands of them), produced a tuft of radical leaves in the first year, but no stems; in the second year they sent up stems bearing innumerable heads, in contrast with the more sparingly flowered *G. cuneifolia*. The tint of the foliage of *G. squarrosa* was decidedly glaucous, that of *G. cuneifolia* a pure green. Further experiments on these lines would doubtless reveal further points of difference between other species of *grindelia*, and we hope to make experiments in this direction with *G. camporum*.

The constituents of the plants cultivated in England were found by Dr. Power to differ materially from those of the official drug, but owing to the absence of well-defined active constituents in the latter, no exact comparison between the two was possible. It should be added, in conclusion, that the only *Grindelia* I have seen on the London market during the last two years is *Grindelia camporum*, and this condition also apparently obtains in the United States, for Professor John Uri Lloyd states that there is no *G. squarrosa* on the general market (Pharm. Review, Milwaukee, Nov. 1905, p. 329).

EXPLANATION OF FIGURES.

Plate I.

Fig. 1. Nuttall's type of *Grindelia robusta*, $\frac{2}{3}$ linear.
Fig. 1A. Disk floret of same, $\frac{2}{1}$ linear.
Fig. 2. Akene of disk of *G. camporum*. *a*, auriculate appendages, $\frac{2}{1}$ linear.
Fig. 2A. "Obscurely triquetrous" akene of ray of *G. camporum*, $\frac{2}{1}$ linear.
Figs. 3 and 3A. Akenes of *G. squarrosa*, $\frac{2}{1}$ linear.
Figs. 4 and 4A. Leaves from upper portion of stem of *G. camporum*, $\frac{2}{3}$ linear.
Figs. 5 and 5A. Leaves from upper portion of stem of *G. squarrosa*, $\frac{2}{3}$ linear.
Fig. 6. Nuttall's type of *G. cuneifolia*, $\frac{2}{3}$ linear.

Plate II.

Photographs of specimens of *G. squarrosa*, grown at Dartford, Kent, England. Reduced.

Mr. Sayre said he was very much interested in these two papers, especially that upon grindelia robusta. The question had occurred to him, however, in view of the different species of grindelia as they occur in the West, and as furnished by the dealers indiscriminately, without regard to botanical correctness, whether it would be regarded by the government as adulteration where the pharmacist used in his preparations grindelia squarrosa or g. camporum, rather than the grindelia robusta, as required by the Pharmacopœia. He thought it would be a great hardship on the pharmacists in that locality to have too rigid a rule established.

Mr. Lyons said the botanical knowledge of the source of a number of drugs was very scanty, and that the descriptions officially given might apply to either grindelia camporum or grindelia robusta or squarrosa.

On motion of Mr. Sayre the papers of Messrs. Powers and Perrédès were received and referred for publication.

At request of the Chair, Mr. H. M. Gordin, then presented a paper upon the separation of morphine from glycerin:

SEPARATION OF MORPHINE FROM ITS SOLUTION IN GLYCERIN.

BY H. M. GORDIN.

(In Collaboration with W. H. Harrison.)

Owing to the considerable solubility of morphine in glycerin it is difficult to separate this alkaloid from its solvent. From a 50-per cent. solution of glycerin containing about 350 milligrams of the alkaloid in 100 Cc. of liquid, morphine is not precipitated by alkaline carbonates. Ether or chloroform do not dissolve glycerin, but neither do they dissolve much morphine. Amyl alcohol is a somewhat better solvent for morphine, but it also dissolves about 8 per cent. glycerin. Hence on shaking out a glycerin solution of morphine with amyl alcohol three or four times, considerable glycerin will go along with the alkaloid, and when the amyl alcohol is then shaken out with acidulated water the water will take up both the alkaloid and the glycerin.

The first method that suggested itself was to remove the glycerin by a current of steam. It was found that ordinary steam at 100° does not take up any appreciable amount of glycerin. Even superheated steam at 135° takes up very little glycerin.

Steam of a much higher temperature would undoubtedly remove all the glycerin, but it being certain that high temperatures would destroy the morphine during the long time that is required to remove all the glycerin the method was dropped.

The second method was to mix the glycerin solution of morphine with about ten times its amount of lead oxide, heat on the water-bath to perfect dryness, and extract the morphine repeatedly with hot amyl alcohol. From the latter the alkaloid could then be extracted by means of dilute acid. While this method looked promising at first, the results were entirely negative. Not a trace of morphine was recovered. Either the alkaloid is destroyed by the heating on the water-bath with the lead oxide, or, what is more probable, morphine having a phenolic character forms a lead salt with the metallic oxide, which salt is completely insoluble in hot amyl alcohol.

The next method tried was to dilute the glycerin solution of morphine with a saturated solution of potassium carbonate and then shake the liquid out three times with hot amyl alcohol. From the amyl alcohol the alkaloid was extracted by shaking out three times with small amounts of dilute sulphuric acid. By this method some morphine was recovered but the amount was very small. As the method is very inconvenient with larger quantities of liquid and the results are poor this method too is certainly very unsatisfactory.

The best results were obtained by the following method. The glycerin solution of morphine sulphate is treated with an excess of normal iodine solution and the liquid diluted with water to about three times the original volume. On standing over night about 80 per cent of the morphine taken crystallized out as the characteristic morphine hydriodide triiodide. The crystals were collected upon a small filter, washed with water containing a little Wagner's reagent and then dissolved by adding a few Cc. of a 10 per cent. solution of sulphurous acid.

In this way even starting with a very large amount of a glycerin solution of morphine the alkaloid is finally obtained in only a few Cc. of an aqueous liquid perfectly free from glycerin. On now adding a slight excess of potassium carbonate and heating to about 100° for a minute or two the alkaloid commences to crystallize out within half an hour.

Northwestern University School of Pharmacy, Chicago, Ill.

Mr. Lyons called attention to the fact that the synopsis of the paper appearing upon the program showed that about 80 per cent. morphine was recovered, and inquired if by the method Mr. Gordin advised some years ago—his periodide method—the total morphine content could be determined—the full 100 per cent.

Mr. Gordin replied that in case the solution used was pure and colorless it could be done; that usually it would not be possible, because the solution would not be pure.

In answer to a question by Mr. Lyons as to the use of ether for extraction, Mr. Gordin said it did not work satisfactorily.

Mr. Sayre asked if the crystalline morphine could not be extracted by washing out the aqueous solution with chloroform or some other immiscible solvent. Mr. Gordin replied that it was entirely unnecessary, but it could be done; chloroform was a poor solvent, however.

Mr. Puckner said that work of this sort was exceedingly important work for this Section. Pharmacists are called upon, and will be called on more and more, to do work of this kind. There is great agitation as to morphine proprietary remedies. Physicians are constantly asking if there is morphine in this or that preparation, and knowledge of such methods will be very valuable to pharmacists. The processes are exceedingly simple, and the precipitations are quite complete. He asked, if instead of adding sulphurous acid to decompose the periodide, the author had tried sodium sulphite, which at one and the same time destroys the periodide and renders the solution alkaline—because this salt, because of hydrolysis, is alkaline. In this way one reagent is concentrated form will suffice.

Mr. Gordin replied that it could be used in that way. It takes only a very small amount of sulphurous acid, however, to develop the periodide. Any crude method will suffice to get the larger quantities of morphine out; the trouble is with the small lots, where the official process is finished, and the sulphurous acid comes in then.

Mr. J. U. Lloyd said that the thing which appealed to him in connection with this paper was the fact that conditions that may arise, demand new methods of investigation and analysis. Mr. Gordin appeared to have met this glycerin difficulty, but it might be that before he was a year older he would find morphine in some relation where other difficulties would arise —"that obstinate alkaloid, morphine, that differs so from other alkaloids." He thought there was possible danger in this subject of glycerin with morphine, as those who followed the text-book might be misled by the failure to discover the presence of morphine.

Mr. Vanderkleed asked the author of the paper whether morphine was soluble in carbon disulphide, and whether it could be used as a means of separating morphine in solutions. Mr. Gordin replied that it was very little soluble, but the plan would be fine if the solubility were greater.

The Chair then called on Mr. Gordin to read a paper on alkaloidal assays he had prepared, and the gentleman presented the paper in abstract:

SOME ALKALOIDAL ASSAYS.

BY H. M. GORDIN.

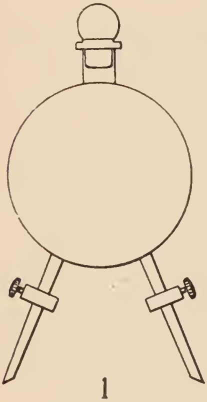
While most of the methods adopted in the U. S. P. of 1900 for the alkaloidal assay of drugs and galenicals are very good there are a few among them that either do not work at all or are so complicated that they will hardly ever give concordant results in the hands of different chemists. To the first class belong the assays of aconite root, its fluidextract and the fluidextract of ipecac. In these assays we are directed to filter the first acid liquids obtained in the method but as these liquids are very thick and slimy they soon clog up the filter and the assays cannot be finished.

To the second class belong several assays which by introducing certain modifications into the pharmacopœial methods or replacing the latter by other ones could be made simple and capable of giving concordant results.

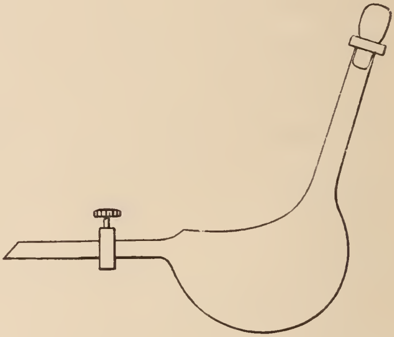
Such, for example, are the assays of extract of physostigma and a few others. I therefore propose the following methods which can also be applied to many other cases and which, particularly when used in combination with the shaking tube-percolator described in a previous paper (Am. J. Phar. 1905, 463) and the two special separating funnels described below will be found to be simple, short and exact. While the principles in some of these methods are not strictly new, I do not know of their ever having been used in the way here described.

These principles consist in avoiding the distillation of ethereal solutions to dryness and the substitution of fixed alkali or alkali carbonate for ammonia for the liberation of alkaloids from the aqueous solutions of their salts. While in pure condition most alkaloids can be dried without decomposition, in presence of impurities which always accompany the alkaloids obtained in drug assays, the alkaloids frequently become partially resinified when their ethereal or chloroformic solutions are distilled to dryness and are then difficultly soluble in dilute acids without the use of heat. The heat in presence of free acid is liable to injure many alkaloids. In order to avoid the distillation of etheral solutions of alkaloids to dryness, the latter can be directly shaken out with excess of standard acid provided no other basic substance is present in the ethereal solution. If ammonia be used to set the alkaloid free there will be large quantities of the volatile alkali in the ethereal solution and the latter will have to be distilled to dryness or at least to small bulk in order to remove the last trace of ammonia which having a much smaller molecular weight than most alkaloids, would, if not completely removed, vitiate the results obtained by residual titration. But if instead of ammonia sodium carbonate or sodium hydroxide be used for liberating the alkaloids, we can always make use of an immiscible solvent which does not take up any trace of fixed alkali and which will, therefore, contain no other basic substance except minute traces of ammonia formed by the action of the fixed alkali upon the albuminous matter of the drug. Such traces of ammonia can be easily and quickly removed either by drawing air over the surface of the ethereal liquid or more quickly by concentrating the ethereal solution upon a warm water-bath to about one-half of its original volume. As immiscible solvent in these methods ether alone cannot be used because, dissolving water, ether takes up some fixed alkali when shaken an alkaline solution. But if instead of ether alone, chloroform alone, or a mixture of three volumes of ether and one volume of chloroform, or a mixture of two or three volumes of ether and one volume of petroleum ether be shaken up with a solution of a fixed alkali no trace of alkali goes into the immiscible solvent even if the alkaline solution contains 50 or 60 per cent. alcohol. This can be shown by filtering the immiscible solvent, after shaking it with the alkaline solution, through a plain filter, of ordinary * filter paper, having four folds on each side and previously moistened with ether, and then shaking up the ethereal liquid with a little water. Neither phenolphthalein nor any other delicate indicator will show the presence of alkali in the aqueous liquid.

In using these assay methods ordinary vessels may, of course, be used. But the sources of error involved in transferring ethereal liquids from one vessel to another can be eliminated by making use of the two following separatory funnels.



1



2

By means of separatory funnel No. 1 aqueous and ethereal liquids can be drawn off through separate outlets and the contamination of the immiscible liquids by each other completely avoided. By means of funnel No. 2 the concentration of an ethereal liquid can be accomplished by placing the funnel in warm water and connecting the long goose neck with a condenser and thus the transferring of the liquid from a distilling flask to separatory funnel avoided.†

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* Ordinary filter paper is a better absorber of moisture and therefore of traces of adhering alkali than the filters used for quantitative analysis.

† A somewhat similar funnel was devised by H. Bremer.

ACONITE ROOT.

Put ten grams aconite root (No. 60 powder) into the percolator-shaking tube, add 50 Cc. of a mixture of three volumes ether and one volume chloroform and 5 Cc. of a ten per cent. solution of sodium carbonate. After stoppering the tube shake the whole thoroughly during one hour, then percolate with the same immiscible solvent to exhaustion. In order to obtain a perfectly clear liquid free from any trace of fixed alkali pass the stop-cock of the percolator through a very wide cork placed over a small funnel which contains a small plain double filter of ordinary filter-paper having four folds on each side. The cork serves as a cover to prevent evaporation. The percolate can be received into any vessel or better into special separatory funnel No. 2. The percolate is then concentrated from warm water to about one-half of the original volume to remove traces of ammonia and when cold diluted again with ether to approximately the original volume. The ethereal liquid is now shaken out once with excess of standard acid and then twice washed with water. The excess of acid is then titrated in the usual way. As it is always advisable to control the acidimetric estimation by a gravimetric one the acid liquid can be received into a separating funnel of suitable capacity and the titration carried out directly in this funnel. After the titration the liquid is made strongly alkaline with sodium hydroxide and shaken out three times with chloroform. The indicator added all remains in the alkaline aqueous liquid and the colorless chloroformic solution, after evaporation, leaves the alkaloid to be weighed and identified by special reactions. Assayed by this method a sample of good aconite root gave, (volumetrically) 1.02 per cent. alkaloids.

IPECAC ROOT.

Put five grams ipecac (No. 60 powder) into shaking tube, add 2.5 Cc. of a 10-per cent. solution of sodium carbonate and 25 Cc. of the same immiscible solvent as was used for aconite. After shaking one hour percolate to exhaustion. Shake out percolate three times with small quantities of very dilute sulphuric acid, add excess of sodium hydroxide and shake out three times with ether-chloroform. Distill off about one-half, dilute with ether to about original volume, and finish as with aconite root.

A good sample of ipecac assayed by this method gave 2.55 per cent. alkaloid.

An attempt to assay belladonna leaves by this method showed that the leaves cannot be exhausted if sodium carbonate is used. (Sodium hydroxide was not tried.)

FLUIDEXTRACTS.

These were assayed as follows:

From 5 to 20 Cc. of the fluidextract were shaken out three times with the immiscible solvents, using 30, 20 and 20 Cc., and making the liquid alkaline with 10-per cent. solution of sodium carbonate in separatory funnel No. 1. The immiscible solvent was filtered into separatory funnel No. 2, and after concentration to about one-half, and dilution with ether, shaken out with excess of standard acid, and then washed twice with water. The excess of acid was titrated in the usual way. The whole volumetric assay of a fluidextract by this method occupies about two hours. The method works very well with the following fluidextracts: Aconite root, belladonna root, coca leaves and ipecac root. For ipecac 5 Cc. and for belladonna root 20 Cc. were taken; for aconite or coca 10 Cc. were taken. As immiscible solvent a mixture of two volumes of ether and one volume of petroleum-ether was used.

The results obtained from samples prepared in our laboratory from drugs of good quality were as follows:

Fluidextract, aconite	1.20
Fluidextract, coca	0.76
Fluidextract, belladonna root	0.60
Fluidextract, ipecac	1.80

FLUIDEXTRACT OF PILOCARPUS.

Owing undoubtedly to the solubility of pilocarpine in water and to the tendency of this fluidextract to emulsify, the Pharmacopœia directs to evaporate the fluidextract on sand, and then extract the sand with chloroform in presence of ammonia. A much quicker method is as follows: To ten Cc. of the fluidextract placed in separatory funnel No. 1 add 10 Cc. of a saturated solution of potassium carbonate and shake out the alkaloids three times with a mixture of three volumes of ether and one volume of chloroform, using 40 Cc. each time. Filter the ethereal liquid into separatory funnel No. 2, concentrate to about one-half, dilute with ether, and shake out with standard acid. The excess of acid is titrated as usual. A sample obtained from S. and D. gave 0.53 per cent.

FLUID EXTRACT OF CINCHONA.

Owing again to the tendency of this fluidextract to emulsify the Pharmacopœia directs to mix the fluidextract with ether, chloroform and ammonia, and then draw off an aliquot part for the assay. As the use of aliquot parts of ethereal liquids is objectionable wherever it can be avoided, I use the following method:

To 5 Cc. of the fluidextract placed in funnel No. 1 add 2 Cc. of a ten per cent. solution of sodium hydroxide and shake it out three times with a mixture of three volumes of ether and one volume of chloroform, using 25 Cc. each time. Filter ethereal solution into another separatory funnel and shake it out three times with dilute sulphuric acid. From the acid solution the alkaloids are extracted with chloroform in presence of any alkali, the chloroform distilled off from a tared vessel, and the residue dried and weighed. No emulsion occurs during the process. A sample of fluidextract prepared in our laboratory gave 4.81 percent. total alkaloids.

EXTRACTUM PHYSOSTIGMATIS.

Having found the pharmacopœial method rather complicated, I have used the following method, which is short and exact:

Dissolve two grams of the solid extract placed in a small evaporating dish in about 10 Cc. of cold water acidulated with five drops of dilute acetic acid (U. S. P.), and transfer the turbid liquid to a 25 Cc. measuring flask. Wash the dish with small quantities of water, and make up the liquid to 25 Cc. Filter through a dry filter, and by means of a pipette transfer 12.5 Cc. of the filtrate to separating funnel No. 1. To the contents of the funnel add 10 Cc. of a saturated solution of sodium bicarbonate, and 100 Cc. of a mixture of one volume of petroleum-ether and three volumes of ether. Shake thoroughly for a minute or so, draw off the alkaline aqueous liquid, and throw it away, then filter the ethereal solution into separatory funnel No. 2, through a plain double filter of ordinary paper, having four folds on each side. Wash the first separating funnel and the filter repeatedly with more of the immiscible solvent, and concentrate the ethereal liquid to about one half. Cool, dilute with ether, and shake out first with excess of standard acid, and then twice with water. Titrate excess of acid with standard alkali, using hematoxylin as indicator. The acid liquid is perfectly colorless, and the end-reaction is exceptionally sharp.

A higher yield of alkaloid can be obtained by substituting chloroform for the petroleum-ether in the above immiscible solvent. In this case too the method works well and the end-reaction is very sharp. But neither method gives the amount of all the alkaloids in the drug, which could only be obtained by repeated extraction with chloroform. As this is inconvenient, the results obtained by either of the above methods could be adopted as official standard.

A sample obtained from P. D. & Co. gave the following results:

Stated strength	5.00 per cent.
By first method	4.20 per cent.
By second method	4.91 per cent.

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Mr. Gordin exhibited and explained two separatory funnels, or "modified distilling apparatuses," one for drawing off the immiscible solvent and the other for evaporating the volatile solvent without removing from the separatory funnel.

The Chair stated that this paper was highly appropriate at this time, when all were wrestling with the new methods of the Pharmacopœia—especially as to the assay of aconite and ipecac, the aconite being difficult to filter, and the ipecac very apt to form emulsions.

Mr. Eliel said he had been very much interested in listening to this very excellent paper. When the new Pharmacopœia appeared, it had been supposed that the assay methods introduced would be such that even the country pharmacist would be able to conduct them and determine the standard and the purity of the drugs that he purchased. He was sorry to say, however, that this was not the case. He described his difficulties in the assay of opium as an illustration.

Mr. Puckner stated that he had been trying to follow a plan similar to that suggested in the paper. Also, the methods of the German Pharmacopœia are based upon the plan of eliminating the distillation of the ethereal liquid. He had hesitated about adopting this plan without thorough experimentation, because of the experiments of Thoms, who has found that this class of drugs pretty generally contain volatile bases. This conclusion of Thoms agreed with his own, and was the cause of much of the difficulty which the Proximate Assay Committee had in working out an assay method for henbane. He would like to ask Mr. Gordin if he had considered this in his assay method.

Mr. Gordin replied that in every analytical operation the chemist always tests every step, to insure complete extraction and the removal of the alkaloid from one liquid to another in the case of immiscible solvents.

Mr. Gordin then went on to explain in detail the process employed by him. He explained that the members could get the separatory apparatus exhibited from their glass dealers. He remarked incidentally upon the absence in the Proceedings of a cut of the percolator tube described in connection with a paper read last year. The General Secretary replied that while the tube had been exhibited at the meeting, there was no cut with the paper as submitted, according to his recollection.

Mr. J. M. Francis, of Detroit, reviewed some of the points of the paper, to ascertain from the author if he understood him correctly. He then went into a detailed account of the processes of alkaloidal assay employed by him in the establishment with which he was connected, and stated the results attained.

Mr. Lyons said the methods of assay described by Mr. Francis were essentially the same as those employed by himself, though differing in certain minor particulars, some of which he mentioned.

Mr. Gordin said the methods described were very good ones; that his own was but one of many, but one that he liked.

Mr. Sayre said he thought the difficulty of redissolving these residues could not be emphasized too strongly. He wished to discuss this subject later, in a paper he had prepared on gelsemium.

Thereupon the Chair invited Mr. Sayre to present his paper at this time, since it had to do chiefly with assay work, and was along the same line as the paper just read.

Mr. Sayre presented his paper in abstract:

THE ALKALOIDAL CONTENT OF GELSEMIUM ROOT AND RHIZOME.

BY L. E. SAYRE.

At the last meeting of this Association I had the honor of presenting to this Section a paper relating to the alkaloidal value of the fresh and the dry root and rhizome of gelsemium. The present paper is a report of continued work in the same direction, and, in addition, a record of some experiments designed to answer the question: How best to assay the drug. For the purpose of this study the gelsemium was specially collected and sent to the laboratory in the fresh condition. For this service we desire to acknowledge our indebtedness to Professor J. U. Lloyd, of Cincinnati.

It may be remembered that, in the paper presented last year, designed to compare the fresh and dry conditions of this drug, we intimated that we were unfortunate in having to compare a dry gelsemium collected possibly under different conditions from that of the fresh gelsemium. The fresh drug had been sent to us preserved in alcohol. The alkaloidal content of this sample was compared with a dried root of which it could not be said, that it had been collected under similar conditions, and to this extent the comparison was faulty. The present invoice of drug was re-received in the fresh condition, but not preserved in alcohol and consequently a better comparison could be made.

One portion of this green root was dried in the open air, another in a current of dry and slightly warm air. The loss in weight in both cases was about the same—47.43 and 47.49 per cent. The method of drying made no appreciable difference in the alkaloidal content, although it was evident from actual experiment that heat employed in connection with solvents in the process of extraction has a tendency to diminish the proportion of the alkaloidal principles.

Although the method formerly employed for the alkaloidal assay of gelsemium has proved somewhat unsatisfactory in that there is very great tendency to a loss of alkaloid or wastage of the active principles in the process, still, for the purpose of comparison of last year's sample, the same Blythe process described in the last paper was used. The result of this comparison was very favorable to the present year's drug. It yielded in an average af 10 different assays about 0.1 per cent. more of total alkaloids. It is to be remembered that the alkaloidal principles of this drug reside exclusively in the bark, so that a gelsemium having a thicker bark would give a proportionately larger yield of alkaloid. It is impossible to say of course whether the difference of alkaloidal yield of the two lots was due to this cause or not, but it is an interesting fact that gelsemium is so variable.

We are not at present prepared to suggest a process of assay that will give maximum and uniform results, but we have obtained larger yields by the use of other processes. In one of these we employed the constituents of the well-known Prollius fluid of the following proportions: Ether 250

Cc., chloroform 80 Cc., alcohol 20 Cc. and stronger water of ammonia 15 Cc. The usual details of procedure of washing out, with acidulated water, then with ether-chloroform were followed, the result being, in the ten assays that were made, an average of 0.346 per cent.

A number of other processes of assay were tried with a view to securing, if possible, better results. But to two of these I shall take the liberty of referring in detail.

1. Seven grams of the root, in finely divided condition were macerated for one hour in a closed flask with 140 Cc. of ether and 5 Cc. of a 15 per cent. solution of sodium hydroxide with frequent agitation. The ethereal liquid was then drawn off through a pad of absorbent cotton wool and set aside until clear. 100 Cc., or an aliquot portion, of the clear ethereal extract, 10 Cc. of which equalled one gram of the root, were then measured off and shaken out with 15, 10, and 10 Cc., in succession, of a 1 per cent. hydrochloric acid.

The acid washing was filtered into a separator, then made alkaline with ammonia and shaken out with 15, 10 and 10 Cc. of chloroform. The chloroformic extract was transferred to a small tared dish and the solvent evaporated off in a current of dry air. The residue was moistened twice with ether and each was again evaporated off, and the residue was dried to constant weight in a dessicator. To determine, or rather to check, the actual amount of alkaloid volumetrically, the residue after weighing was dissolved in a very small quantity of alcohol, to which was added 20 Cc. of water and a few drops of hæmatoxylin indicator. It was then titrated with centinormal hydrochloric acid, each Cc. being equivalent to 0.0815 per cent. of the alkaloid from 5 grams of the drug. This equivalent is taken from Lyons Assay of Drugs p. 55, in which it is stated that 1 Cc. of $\frac{N}{25}$ acid is equivalent to 0.326 per cent. of gelsemine from 5 grams of the drug. I should state that the volumetric method in every case gave results much lower than the weighing, the results were also much less uniform; this was partly due to the unsatisfactory working of the indicator, the end, point of which was not quick and sharp; a change to a green marked the point of neutralization.

The factor above referred to is based upon the alkaloid gelsemine, but it may be remembered that there are said to be two alkaloids in gelsemium, of which gelsemine is one, and therefore the factor, while useful in volumetric work may not be accurate for total alkaloids. The result of the above process, in five different assays gave by weight, 0.402 per cent. of alkaloids as an average, while the volumetric titration of the five alkaloidal residues gave an average of only 0.296 per cent; the percentage in both instances being based upon the air-dry drug. The discrepancy in the two percentages may be due to the lack of skill on the part of the operator, possibly to the process of titration, or to both combined.

The other process experimented with, worthy of record, is the method officially employed in the assay of hydrastis, allowing, however, one hour instead of twenty minutes for the maceration of the fresh drug in the ethereal liquid. The result of five assays gave an average of 0.4725 per cent. of alkaloid.

As to the comparison of the fresh and dry conditions of the drug, it would be overburdening this paper with figures to give the various percentages obtained in different assays; and until a thoroughly reliable process of assay is decided upon I do not feel safe in making any positive statement concerning it. I may say, however, that some of the individual assays of dry and fresh drug corresponded quite closely, but taking the average of five assays the yield of the dry root showed a skringage of .06 per cent. of alkaloid. I am inclined to the opinion, however, that if the root is very carefully dried in a current of warm air, the alkaloidal content is not materially diminished, but if dried by a slow process and in a very warm close place favorable to fermentive change, the effect may be detrimental to the drug.

I have not found a process by which the two alleged alkaloids may be separated. These have been named gelsemine and gelseminine. Thompson (1887) identified these, Cushny supported this identification, 1893. Prof. J. U. Lloyd, in Drug Treatise, No. IX, p. 5, says: "The qualities and constitution of the alkaloid, or rather we should say of the alkaloids, for the subject of their number is yet one of discussion, are yet under dispute." A running history of the investigations is set forth in the treatise referred to. L. Sonnenschein (Berichte, 1876, IX, p. 1182) gives a method of separating the gelsemic acid, the fluorescent principle, analogous to aesculetin, and the alkaloid named gelsemine. Thompson's method of separating this latter into two alkaloids, although not as yet obtained, has been promised by two workers in this Section of the A. Ph. A.

I have observed sometimes, in washing out the alkaloid from a solution of the alkaline ammonium chloride, that it is difficult to get rid of a small amount of the latter that clings to the gelsemine. One cannot separate the ammonium salt from the alkaloidal residue by washing this residue with water, as the alkaloid seems to be slightly soluble in the salt solution, this solution giving a strongly alkaloidal reaction. But the separation may be affected by dissolving the amorphous alkaloid from the salt in the dry residue by means of ether. When ether is used for this separation the ammonium chloride is left behind and can be identified as such.

Mr. Lloyd opened the discussion on this paper. Referring to the writer's comments on the variance of the alkaloidal content of the drug in question being only half as much one year as another, he said that was not at all unusual, as the character of the season influences the amount of alkaloid to be found; the amount of moisture in the air influences the amount of extractive matter in the drug; also locality, as hillside or valley. It is also not unusual to find twice the amount of alkaloid in one bag of the drug as compared with another of the same product. The variation in the pharmaceutical preparation is small, however, compared with the variation in dosage prescribed by the physician.

Mr. Lyons said that the knowledge of the facts of chemistry is so altogether insufficient that we are only feeling around for the truth. He felt that every atom of chemical truth to be obtained in regard to the composition of drugs would be of value hereafter. As to variation in dosage by the physician, he knows the medicine he gives varies in strength, and he feels his way by gradually increasing the dose until the desired result comes about. The pharmacist should aid the physician as far as possible by having uniformity in his preparations. The volumetric determination of gelsemium alkaloids is exceedingly unsatisfactory; he had never been able, by repeated extractions, to get anything that he could say was the alkaloid, pure and simple.

Mr. Sayre remarked that the variation in gelsemium was not only dependent on the causes referred to, but on the percentage of bark, which largely determined the strength.

Mr. Lloyd said it had been stated that a root of gelsemium as large as a man's wrist contained but a very small percentage of the alkaloid as compared with a small rhizome, and that the alkaloidal quality exists almost altogether in the bark, and not in the wood.

The Chair stated that there was a paper before the Section on commercial "Cocoas," by Mr. Scoville, but the author was not present, and the paper would be read by title only, as it consisted almost entirely of figures. The text of the paper here follows:

COMMERCIAL "COCOAS."

BY WILBUR L. SCOVILLE, BOSTON, MASS.

The following table shows the results of analyses of ten of the most popular brands of "Cocoa" in the market:

	Per cent. moisture.	*Per cent. ash.*	*Insoluble ash.*	*Alkalinity of ash (as Na_2Co_3)*	*Per cent. oil.*	*Per cent. soluble in water.*	*Per cent. alkaloids.*	*Foreign flavors.*	*Microscopic examination.*
No. 1	6.70	6.85	1.25	2.65	30 40	15.34	0.363	None	O. K.
No. 2	7.35	6.65	1.38	2.65	29.19	15.86	0.380	Vanilla	Shells
No. 3	6.10	5.00	2.48	0.93	27.55	20.20	0.353	None	Shells
No. 4	4.02	4.75	2.40	0.93	35.65	13.22	0.346	None	O. K.
No. 5	5.51	12.50	1.00	6.03	26.45	18.24	0.171	Vanilla	Shells
No. 6	2.14	3.10	2.05	0.42	22.27	67.97	0.220	Spices	O. K.
No. 7	3.80	5.00	2.90	0.72	31.48	16.68	0.364	None	O. K.
No. 8	4.61	5 06	3.72	1.48	28.96	18.78	0.550	Spices	O. K.
No. 9	4.42	4.14	2.85	1.21	32.80	17.56	0.400	Spices	O. K.
No. 10	3.68	5.04	3.64	1.27	32.20	20.56	0.340	Spices	O. K.

Numbers 1, 2, 6, 9 and 10 are imported Cocoas; number 6 being labled "Chocolate" and is half sugar.

A scrutiny of the above figures indicates that the Cocoas differ chiefly in the quantity of soluble alkaline ash which they contain. It was noticed in connection with this that the Cocoas which are regarded as being stronger in flavoring power contained the largest proportion of alkalinity in the ash. This suggested that alkalies might have a part in the preparation of these Cocoas. On trial it was found that the addition of a little bicarbonate of sodium to a solution of the Cocoa made the solution darker in color and the flavor appeared stronger.

The American Cocoas examined, with one exception, are made without alkali and can be much extended by the addition of about half a per cent. of sodium or potassium bicarbonate. The taste of the alkali is not apparent to this extent. The imported Cocoas will not bear as much, since they already contain alkali.

The added flavors found in some brands are not in proportion large enough to materially affect the strength or character of the chocolate made therefrom and are not to be seriously considered.

The proportion of Cocoa shells found was in all but one sample very small, and not an important factor. The exceptional case did not need a microscope to tell its inferiority.

Mr. Francis, of Detroit, here stated that, since the adoption of the U. S. P. as a legal standard by the general government, its assay processes had assumed tremendous importance, not only to the manufacturing pharmacist, but to every retail pharmacist and jobber in the United States; and he did not know of anything more deserving of discussion before this Section than some topic which would bring out an expression of opinion and criticism of the assay methods of the Pharmacopœia. He hoped, therefore, that it could be arranged to give this subject a prominent place.

Mr. Lyons suggested that an opportunity would be given for this when the report of the Committee on United States Pharmacopœia was presented.

Mr. Hallberg said he was afraid the report of this committee would not come up until Saturday morning, at the last general session, when there would be a tremendous rush of other business, and he thought this Section should fix a time for the discussion of this very important subject. He gave it as his opinion that a committee ought to be selected by this Section and appointed by the Association to go over these assay processes, and, if necessary, secure permission for making any revision that might be required. As he understood it, the Revision Committee was authorized to make any supplement or addition to the Pharmacopœia that might be desirable.

The Chair suggested that, as there was a Committee on Revision of the Pharmacopœia and nearly all of its members attended the sessions of the Scientific Section, he would suggest that it would be within their province to look after the assays of the Pharmacopœia, just as the Pharmacopœia as a whole; which would seem to make it unnecessary to appoint a special committee on the subject.

Mr. Hallberg thereupon moved that the Section meet at 2 o'clock to-morrow (Friday) afternoon, instead of at 3 o'clock as fixed, so as to give an hour at the end of the session for the discussion of assay methods of the Pharmacopœia, and that the Secretary post notices to that effect. The motion was seconded by Mr. Sayre and carried.

Mr. Francis suggested that Mr. Hallberg's proposition might run up against the question of legality, and that the matter would have to be approached very gingerly. He said the Department of Agriculture had been doing splendid work along this line and should have the help and cooperation of others.

Mr. Kebler concurred in this view, and spoke of the aid the pharmaceutical chemists had given the laboratory in its work.

On motion, the Section then adjourned.

SECOND SESSION—FRIDAY AFTERNOON, SEPTEMBER 7, 1906.

The second session of the Section on Scientific Papers met at 2:15 p. m., with Chairman C. E. Caspari presiding.

On motion of Mr. Eliel, the reading of the minutes of the first session was dispensed with.

The Chair called for further nominations for officers of the Section, stating that Mr. Reid Hunt, of Washington City, was in nomination for Chairman, and Mr. Virgil Coblentz, of New York, for Secretary. On motion of Mr. Rusby, seconded by Mr. Lyons, nominations were closed, the rules suspended, and the Secretary directed to cast the affirmative ballot of the Section, electing Mr. Hunt and Mr. Coblentz, Chairman and Secretary, respectively. Mr. Wilbert announced that he had cast the ballot as directed, and these gentlemen were declared duly elected.

The Chair announced the reading of papers as next in order, and called on Mr. Charles E. Vanderkleed, of Philadelphia, to read as the first of a series of papers prepared by him, one on the suprarenal gland. The gentleman gave an abstract of his paper, the full text being as follows:

A METHOD FOR THE PREPARATION OF SOLUTIONS OF THE ACTIVE PRINCIPLE OF THE SUPRARENAL GLAND.

BY CHARLES E. VANDERKLEED.

In 1856 when Vulpian[*] published an article in the "Comptes Rendus" in which he described many of the chemical reactions of the active principle, known then only as a coloring principle, of the suprarenal gland, there began a series of investigations which has lasted up to the present time. The earlier investigators including Vulpian, Cloez,[†] Arnold,[‡] Holm,[§] Krukenberg,[‖] and Brunner[¶] all sought means of isolating this

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[*] Vulpian. "Comptes Rendus" 43. (1856), p. 663.

[†] Vulpian and Cloez. *Ibid.* 45. (1857), p. 340.

[‡] Arnold. "Virchow's Archiv." 35. (1866), p. 64.

[§] Holm. "Journal für praktische Chemie." 100 (1867), p. 150.

[‖] Krukenberg. "Virchow's Archiv." 101 (1885), p. 542.

[¶] Brunner. "Schweizer Wochenschrift für Chemie und Pharmacie." 30 (1892), p. 121.

"coloring principle," not suspecting its future importance as a therapeutic agent. In 1894 when Oliver and Schaefer* published an account of their observations of the wonderful effect of the active principle of the suprarenal gland upon blood pressure, by its action upon the small blood vessels, all of which was soon thereafter verified by Scymonowicz and Cybulski, and when B. Moore† the next year announced his belief that Vulpian's "Chromogen" and the physiologically active principle were one and the same, an increased interest and added zest was given to suprarenal gland investigations.

The investigator at this time realizing the meaty nature of suprarenal extracts, copied largely after the earlier investigators in that their methods of procedure were quite largely directed toward the removal of inactive and deleterious proteid matter, rather than toward a direct separation of the active principles. The most important work done at this time was by Fränkel,‡ published in 1896, and by Otto von Fürth,§ published in 1897. Both obtained, by their respective methods, active and concentrated preparations containing the active principle in a state of sufficient purity to be of commercial value, the former calling his product "sphygmogenin," and the latter "suprarenin." When, however, a little later in the same year (1897), Abel and Crawford‖ isolated the active principle in the form of an active benzoyl compound, with but a slight previous purification of the gland extract, and when, two years later, Abel¶ published his method for producing the active picrate of this compound by decomposing his benzoyl product by means of diluted sulphuric acid in the autoclave, precipitating the active principle by means of ammonia, making a sulphuric acid solution, and precipitating by means of sodium picrate, the need for previous removal of inactive proteid and extractive matter became less apparent. Thus, by the time when, a year or so later, Aldrich** and Takamine†† applied the method of precipitating the basic active principle by means of ammonia (as already announced by Abel‡‡) directly to the original gland extract in a concentrated form, and all efforts were directed towards purifying these crude products of direct methods of obtaining the active principles, both for commercial and scientific purposes, rather than toward previously purifying the gland extracts from which these more or less crude products were obtained.

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*Oliver and Schaefer. "Journal of Physiology" 16 (1894). Proceedings of Society, March 10, 1894.

† Moore. *Ibid.* 17 (1895). Proceedings of Society, March 16, 1895.

‡ Fränkel, "Wiener medizinische Blätter, Nos. 14, 15, 16 (1896).

§ Von Fürth, "Zeitschrift für physilogische Chemie," 24 (1897), p. 142.

‖ Abel and Crawford, "Johns Hopkins Hospital Bulletin," 8 (1897), p. 151.

¶ Abel, "Zeitschrift für physiologische Chemie," 28 (1899), p. 318.

** Aldrich, "American Journal of Physiology," 5 (1901), p. 457.

†† Takamine, "American Journal of Pharmacy," 73 (1901), p. 523.

‡‡ Already shown by Holm in 1867, although his precipitated "farbstoff" was in an oxidized condition.

In preparing a $\frac{1}{1000}$ solution of the active principle (a strength which seems to be most suitable for therapeutic application) for commercial purposes, the question of yield becomes of great importance. The method, which for nearly three years gave the writer the best results, was essentially that of Dr. J. J. Abel, as published in the Berichte der deutschen chemischen Gesellschaft, vol. 36, pp. 1839–1847, under the heading "Methode II." This method, in short, consists in extracting the commercial glands repeatedly with a dilute solution of trichloracetic acid in alcohol—concentrating in vacuo, precipitating the active principle by means of concentrated ammonia, and washing the precipitate successively with water, alcohol, and ether.

The usual yield by this method, using two extractions with alcohol and trichloracetic acid, is about 11 grains per pound of gland used or about 0.155 per cent. The product obtained, however, contains on an average about 25 per cent. of inorganic salts, chiefly phosphates, which may be determined with sufficient accuracy by simply estimating the ash. This reduces the amount of active principle to 8¼ grains per pound of gland, or about 0.118 per cent. For use in those cases where the presence of these inorganic salts might be objectionable, the crude active principle is purified by means of the oxalic acid-ether method described by Dr. Abel in the article in the "Berichte" mentioned above. By this method, which entails considerable work, there results usually an amount of ash-free active principle equal to about 50 per cent. of the weight of crude product first obtained, a result which cuts down the final yield to about 5.5 grains per pound of gland used, or about 0.078 per cent. In working with glands which have of necessity been kept for a time in cold storage, especially in hot summer weather, still smaller yields are often obtained. In all cases where direct precipitation by ammonia is used, the yield is of necessity much below the theoretical, because of the fact that the strong ammoniacal solution retains much of the active principle in solution (the precipitation by no means being quantitative), and also because, in strong alkaline solution, a considerable amount of active principle is destroyed by oxidation.

To figure on the efficiency of the method, therefore, a means of determining the actual amount of active principle in the original gland material must be had. Such a method was devised by von Fürth and published by him in the Zeitschrift für physiologische Chemie, vol. 29 (1900), p. 105. Von Fürth found that the fresh suprarenal glands of cattle varied in strength of active principle between 0.1 and 0.17 per cent. His method, which is based upon the well known color reaction between iron salts and pyrocatechin, is of sufficient importance and possible interest to be given in detail here, as used by the writer.

The following reagents are required :

I. A freshly-prepared solution of pure pyrocatechin, $\frac{1}{1667}$ or 0.06 per cent.

II. A 24 per cent. solution of potassium-sodium tartrate, containing 18 per cent. of sodium carbonate.

III. A 5 per cent. solution of ferric chloride.

The above solution of pyrocatechin, although only $\frac{1}{1667}$ in strength, is exactly equivalent in coloring power to a $\frac{1}{1000}$ solution of the active principle of the suprarenal gland, since the color reaction is due entirely to the dioxy-benzene nucleus, and is not at all affected by the side chain of the suprarenal body, which side chain increases the molecular weight of this body over and above that of pyrocatechin, as 10 is to 6. (Molecular weight of pyrocatechin—$C_6H_4(OH)_2 = 109.22$; molecular weight of active principle—$C_9H_{13}NO_3 = 181.76$).

The test is conducted as follows :

A slightly acidulated hydro-alcoholic extract of the glands is so diluted that 3 Cc. will represent 1 Gm. of original gland.

Graduated cylinders having the same diameter are selected—3 Cc. of the standard pyrocatechin solution are run into a cylinder—1 Cc. of the Rochelle salt solution is added—and the mixture is diluted with distilled water to 20 Cc. Then 0.3 Cc. of the ferric chloride solution is added from a 1 Cc. pipette, graduated in $\frac{1}{50}$ Cc.—and the contents of the tube thoroughly mixed by agitation. The resulting sherry-wine colored solution serves as a standard of comparison—being equivalent to 3 Cc. of $\frac{1}{1000}$ solution of the active principle of the suprarenal gland, or to 0.003 Gm. of active substance.

Tubes are then prepared in a similar manner, using various amounts of the suprarenal gland extract, until the color of the standard pyrocatechin solution is exactly matched, allowing 5 minutes for the complete production of the color. If much time be consumed in matching the color, fresh standard pyrocatechin solution should be prepared, as the color begins to fade slightly in from 15 minutes to one-half hour.

From the amount of gland extract required to match the color of the standard, the strength of the glands used may be calculated. For example :

7½ Cc. of gland extract, 3 Cc. of which represent 1 Gm. of glands, are required, under the conditions of the test, to match the color produced by 3 Cc. of standard pyrocatechin solution. Then 7½ Cc. of gland extract or 2½ Gms. of the glands contain 0.003 Gm. of active principle, which equals 0.12 per cent.

In the writer's hands the above method has indicated from 0.12 to 0.15 per cent. of active principle in commercial suprarenal glands of cattle—varying somewhat with the age of the glands—and, of course, with the care with which the glands were freed from fat and extraneous matter. It is fair to assume, therefore, for the sake of comparison, a standard of 0.15 per cent. of active principle in fresh well-cleaned bovine glands.

Abel's trichloracetic acid method, therefore, can be expected to yield about 79 or 80 per cent. of the theoretical amount of actual active principle containing 33⅓ per cent. of its own weight of additional inorganic phosphates; and if the subsequent oxalic acid-ether purification be used, the yield will usually be about 52 per cent. of the theoretical.

Since, as has already been stated, in all methods in which the active principle is obtained by direct precipitation with ammonia, a loss is sure to occur by lack of completion of precipitation, and by oxidation,—it occured to the writer that a method might perhaps be devised,—working along the lines of the earlier investigators—whereby an extract of the suprarenal glands could be so freed from inert and deleterious proteids and extractives, and at the same time be allowed to retain the active principle in solution in unchanged form—which method would give a much more nearly theoretical yield—and at the same time afford a sterile solution suitable for dilution to standard strength and for employment therapeutically for all purposes to which the usual $\frac{1}{1000}$ solutions of the active principle are put.

The earlier investigators were placed at the great disadvantage of not knowing the exact chemical nature of the active principle sought; hence in their efforts to isolate it, much was usually destroyed by oxidation due to heating or to other causes. The active principle having been isolated and its delicacy and instability made known, the writer was enabled to use such portions of these earlier workers' methods as did not harm the active principle, rejecting the other portions. After a long series of experiments, in which practically all the known precipitants for proteid matter were employed—first in one combination and order and then in another—the following method was devised:

METHOD FOR PRODUCING AN ACTIVE, STERILE, AND PERMANENT SOLUTION OF THE ACTIVE PRINCIPLE OF THE SUPRARENAL GLAND; WITHOUT AT ANY POINT IN THE PROCESS, SEPARATING THE ACTIVE PRINCIPLE IN SOLID FORM.

One hundred pounds of suprarenal glands, freed as completely as possible from fat, are ground to a pulp. The mass is transferred to a mechanical shaking-apparatus, and shaken for several hours with a solution of 700 Gm. of trichloracetic acid in 20 liters of Columbian spirit. The mixture is allowed to macerate from one to two days, and is then strained and the magma pressed nearly dry. The gland material is returned to the shaking-apparatus for a second extraction, while the strained liquid portion is filtered clear with the aid of the suction-pump.

The clear filtrate is concentrated in vacuo to a thick syrupy liquid, measuring about 2500 Cc. This solution is cooled; filtered by means of the suction-pump, and poured into a 20 per cent. solution of neutral lead acetate. The amount of lead acetate solution necessary for complete precipitation of proteid matter and inorganic phosphates must be determined by experiment. An amount of 20 per cent. solution varying from 50 to 100 per cent. of the volume of concentrated gland extract will be required. The mixture is placed on ice for two hours, and is then filtered.

The clear filtrate is poured into 5 times its own volume of cold Columbian spirit, when a further precipitation of inert matter takes place. The mixture is placed on ice over night, and is then again filtered. The clear filtrate is slightly warmed, and hydrogen sulphide is passed through the solution for two or more hours, whereby the excess of lead is precipitated as lead sulphide. The mixture is again placed upon ice over night, filtered, and distilled in vacuo with a small amount of purified animal charcoal, to recover the alcohol; remove the hydrogen sulphide, and concentrate the solution of the active principle to about 2500 Cc.

The second extract of the gland mass is treated in the same way, it being necessary to concentrate to about one-half the volume of the first concentrated extract, and to use one-half of the quantities of reagents necessary for the first portion.

Aliquot portions of the finished solutions are taken for the determination of the amount of active principle by means of the von Fürth colorimetric method, and solutions are then diluted with a sufficient amount of sterile solution of sodium chloride and boric acid to yield a finished product containing 0.1 per cent of active principle, 0.7 per cent. of sodium chloride and 0.25 per cent. of boric acid. It is advisable, also, to add 0.25 per cent. of sodium sulphite, to retard oxidation of the active principle when bottles are opened and subjected to the action of the atmospheric oxygen: and to add 0.075 per cent. of chloroform, shaking until the latter is dissolved, to prevent the growth of fungi and retain sterility when bottles are opened.

The result is a clear, almost colorless, permanent, sterile, and active solution of the active principle of the suprarenal gland, suitable for all medicinal purposes. Solutions thus prepared have been kept in the writer's laboratory in unsealed amber-colored bottles, subject to all changes of room temperature, without loss of activity and without change, for nine months.

Although the work entailed by the process is great, the yield justifies the increased labor, since by this means I have obtained an amount of $\frac{1}{1000}$ solution equivalent to a yield of 0.144 per cent. of active principle from the amount of gland used, or 96 per cent. of the theoretical, as compared with 80 per cent. of the theoretical in crude form, or 52 per cent. of the theoretical in pure condition, by the Abel methods.

All efforts to produce a dry product by the evaporation, in vacuo, of the concentrated active solutions obtained by the above method have so far failed, owing to the oxidation of the active principle during the process of drying, but by applying some of the purification processes involved, to

Abel's "Methode II," a modification has been devised by the writer, whereby a product almost ash-free, and very light in color, may be obtained by the first precipitation, thereby making unnecessary Abel's oxalic-acid-ether purification. This process, which bids fair to supplant entirely the Abel method in my laboratory, is, in short, as follows:

The extraction of the glands and the subsequent concentration and filtration of the extract, is accomplished in the usual way. The extract is then shaken in separators with ether to further remove fat and coloring matter. To the solution there is then added an amount of 50-per cent. neutral lead acetate solution equal to $\frac{1}{5}$ of the volume of concentrated extract. The mixture is chilled on ice, filtered, and hydrogen sulphide passed through the filtrate until all lead has been precipitated as lead sulphide. The mixture is again chilled, filtered, and precipitated directly by means of concentrated ammonia. The product thus obtained will contain less than 3 per cent. of ash, in contrast with the product containing 25 per cent. of ash obtained by the regular Abel method.

In conclusion, it might be well to add a note with regard to the assay of commercial $\frac{1}{1000}$ solutions of the suprarenal gland active principle. I have found that where the solutions contain preservatives, as they all do, acetone-chloroform, chloroform, sulphites, etc., the colorimetric method of von Fürth does not give accurate results. I have made use of another method, also colorimetric, for this purpose, however, with excellent results—the accuracy of the method not only having been verified by means of extemporaneous solutions prepared from pure ash-free active principle—but having been checked by means of physiologic blood-pressure-raising tests conducted upon dogs. The method is that published in "Comptes Rendus de la Société de Biologie," 1905, p. 300, and in the "Bulletin de la Société Chimique de Paris," 23 (1905), p. 624.

A solution of pure active principle containing 1 Mgm. in 10 Cc. ($\frac{1}{10000}$) is prepared as a standard. To 10 Cc. of this solution is added 5 Cc. of decinormal iodine solution, and, after 15 minutes, starch paste is added, and the excess of iodine exactly reduced with thiosulphate solution. At the moment when the iodine-starch coloration disappears the blue color is succeeded by rose-tint. The liquid is then diluted to 50 Cc., and this solution is used as a standard representing 1 Mgm. of active principle. The color fades on standing, but a permanent standard may be prepared by matching the color of the freshly prepared solution by means of an acid litmus solution.

Tubes containing various amounts of the solution to be tested are then prepared in the same manner, until the color of standard solution has been exactly matched, from which the strength of the solutions may be calculated.

Philadelphia, August, 1906.

There was no discussion on the paper, and it was received and referred.

Mr. Vanderkleed next presented his paper on Phosphorated Resin.

DETERMINATION OF PHOSPHORUS IN PHOSPHORATED RESIN AND OTHER PHARMACEUTICAL PREPARATIONS.

CHARLES E. VANDERKLEED AND JOSEPH L. TURNER.

Having had occasion to make quickly several determinations of phosphorus in phosphorated resin and in phosphorus granulations for tablets, and having found many of the methods advocated for the determination of phosphorus in phosphorated oil long and laborious as well as somewhat uncertain in results, we finally made application, with pleasing results, of a modification of the nitric acid method.

While, of course, in the absolute determination of phosphorus in organic combinations, heating in a sealed tube is essential—in the assay of pharmaceutical preparations containing phosphorus in the free state, the sealed-tube method is not necessary.

The following method as applied to phosphorated resins gave concordant results, accurate within 3 per cent. of the total amount of phosphorus in the preparations:

One-half Gm. of finely powdered substance is placed in a Kjeldahl flask with about 15 Cc. of water. 20 Cc. of fuming nitric acid (Spec. Gr. 1.48) are cautiously added and the mixture slightly warmed until the violent reaction ceases. The temperature is then raised and the solution carefully brought to a syrupy consistence.

The residue is now cooled and the organic matter destroyed by the Kjeldahl process, as follows:

20 to 30 Cc. of concentrated sulphuric acid are added and the mixture is brought gradually to vigorous boiling. After 15 to 20 minutes, 10 Gm. of crystalline potassium sulphate are added and the whole is maintained at a boiling temperature until the solution becomes clear and acquires a pale-straw color. It is now cooled, diluted cautiously with water, cooled again, carefully neutralized with ammonia, rendered acid again with nitric acid, and the phosphoric acid precipitated with ammonium molybdate under the usual conditions. The precipitate is filtered off, washed with dilute solution of ammonium nitrate, re-dissolved in warm dilute ammonia water (1/3) precipitated in the usual manner with magnesia mixture, and finally weighed as magnesium pyrophosphate.

In applying the above method to phosphorus granulations, tablets, or pills, 4 to 8 Gm. of the finely powdered material should be employed and a somewhat increased amount of water and fuming nitric acid for the oxidation.

It would be well in assaying old tablets to make a correction for any phosphorus that may have become oxidized by making a water extraction of the powdered material which has not been treated with an oxidizing agent, and determining the phosphoric acid in the solution.

We have not tried to apply the method to phosphorated oils but would suggest the possibility of emulsifying 5 Gm. of the oil in the Kjeldahl flask with 15 Cc. of water or thin mucilage, and then proceeding in the usual manner to oxidize with fuming nitric acid.

Philadelphia, August, 1906.

The paper was received, to take the usual course.

Mr. Frank R. Eldred, of Indianapolis, presented a paper contributed by himself and Mr. W. C. Bartholomew on the subject of pepsin-testing:

A SIMPLE METHOD OF PEPSIN-TESTING.

BY FRANK R. ELDRED AND W. C. BARTHOLOMEW.

Owing to the extensive use of pepsins and pepsin preparations, it is very desirable that a method be devised by which their proteolytic value may be accurately and rapidly determined. As none of the many methods which have been proposed meet these requirements fully, the present investigation was undertaken with the hope of developing such a method. Although our work is unfinished, we believe that some of the results already obtained are of sufficient value to justify their publication at this time.

It is generally conceded, that, in any method for the valuation of pepsin, the object should be to determine the amount of proteid converted into compounds which can be assimilated. The form in which proteids are assimilated, and the point to which the decomposition of the proteid molecule is carried in the stomach, are still open questions, but in view of our present knowledge, the total amount of the peptones and albumoses * formed is probably the best measure of the value of the pepsin. An arbitrary limit must be placed upon the time of digestion, and the conditions should be as nearly as possible like those existing in the stomach.

The amount of coagulated egg-white remaining unaltered by an acid solution of pepsin, is not always an indication of the amount of peptones and albumoses formed, and methods making this a measure of the activity of the pepsin are of little value.

Many methods have been proposed in which the total amount of peptones and albumoses, or the amount of peptones alone, is made the measure of the value of the pepsin, but most of them are either tedious or inaccurate.

All methods in which disintegrated, coagulated egg-white is used, are open to the objection that, in order to obtain concordant results, the mixture must be uniformly stirred during digestion, thus requiring almost constant attention, or a costly mechanical contrivance. The decrease in the surface exposed to the action of the pepsin as digestion proceeds, is also objectionable.

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* Peptids and probably other dissociation products of the albumins are present in the solution in which the nitrogen is determined, and are, of course, estimated along with the peptones and albumoses. These compounds should be thus included, as they are no doubt assimilated either in this form or after further dissociation.

The method of Kremel * is unsatisfactory on account of the difficulty in exactly neutralizing the acid solution with sodium carbonate, and the slow filtration.

In Allen's † method coagulated egg-white is used, and although the results obtained are very valuable in an investigation of the action of pepsin, the method requires too much time for its routine valuation.

Schultz ‡ used uncoagulated egg-white freed from globulin by treatment with hydrochloric acid and filtration, but he did not determine the amount of peptones and albumoses produced.

We first tried a method using coagulated egg-white and determining the nitrogen in solution after neutralization and filtration. This method was unsatisfactory for the reasons already stated. A method similar to Kremel's except for the modification suggested by Allen § was then tried.

A solution of uncoagulated egg-white, made by dissolving powdered egg-white in water was used, the solution, after digestion, was neutralized with $\frac{N}{2}$ sodium hydroxide, heated for ten minutes in boiling water, filtered, and the nitrogen determined in an aliquot part of the filtrate.

Many experiments were made with this method but concordant results could not be obtained, and it was found that finely-divided albumin sometimes passed through the filter, causing an error. The filtration was slow, often requiring two or three hours. Munktell's 1 F filter-paper was used in all our experiments.

Precipitated calcium carbonate was then tried for neutralizing the acid solution, and it was found that filtration was perfect and very rapid, and the results concordant.

The dried egg-white used was prepared by drying the whites of fresh eggs, previously strained through muslin, on glass plates, in a current of air at room temperature. When thoroughly air-dried it was scraped from the plates and powdered. The nitrogen content, determined by the Kjeldahl–Gunning method, was 12.78 per cent.

Experiments were next made to determine what concentration of pepsin would be most advantageous. From our experiments with the other methods it was found that with small amounts of pepsin (not more than 10 Mg. to 1 g. of dried egg-white), the amount of nitrogen found in solution varied considerably with slightly differing amounts of pepsin; but when larger amounts of pepsin were used, the variations were much less.

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* Kremel: Drug. Cir., 1885, 29–222; from Pharm. Post.

† Allen: Analyst, 1887, 22–258.

‡ Schutz: Zts. physiol. Chem., 9–581.

§ Allen: Com. Org. Analysis, Vol. 4, 2d ed., p. 356.

The results of our preliminary experiments led to the selection of the following method: 1 Gm. of powdered egg-white is placed on the surface of 30 Cc. of water, contained in a tared Erlenmeyer flask of about 125 Cc. capacity. The flask is stoppered, rotated gently, placed in an air-bath, regulated to maintain a temperature of 40° C. When the egg-white has dissolved, and the solution has reached the temperature of the air-bath, 2 Cc. of $\frac{N}{1}$ hydrochloric acid, and 5 Cc. of a solution of the pepsin, containing 100 Mg. in 500 Cc. of water are added, and the flask kept at a temperature of 40° C. for two hours. About 1 Gm. of precipitated calcium carbonate is then added to the flask, the contents mixed by rotating, and the flask immersed in boiling water for ten minutes, it is then removed, cooled to room temperature, and weighed. Any material adhering to the sides of the flask is loosened with a rubber-tipped rod, and the mixture filtered through double counterpoised filters. In a weighed portion of the filtrate, of about 15 Cc., the nitrogen is determined by the Kjeldahl–Gunning method. The residue on the filter is then thoroughly washed with water, dried at 110° C., and weighed using the outer filter as a counterpoise. This weight is deducted from the total weight of the mixture, in calculating the amount of nitrogen in the solution.

The following samples of commercial pepsins were then tested by this method.

TABLE I.

No. of Pepsin.	Manufacturer's Mark.
1.	Partly insoluble, powd. 1–3000, U. S. P.
2.	Partly insoluble, powd. 1–3000, U. S. P.
3.	Powd. 1–3000, U. S. P.
4.	Insoluble, powd. 1–3000, U. S. P. (1890).
5.	Soluble, powd. 1–3000, U. S. P. (1890).
6.	Soluble, powd. 1–3000, U. S. P. (1890).
7.	Soluble, granular 1–3000, U. S. P. (1890).
8.	Soluble, scale 1–3000, U. S. P. (1890).
9.	Soluble, scale 1–3000, U. S. P.
10.	Soluble, scale 1–3000, U. S. P. (1890).
11.	Soluble, powd. 1–6000, U. S. P. (1890).
12.	Powd. 1–6000, U. S. P. (1890),
13.	Soluble, scale 1–6000, U. S. P. (1890).
14.	Soluble, scale 1–6000, U. S. P. (1890).
15.	Soluble, powd. 1–15000, U. S. P.

In order to determine more fully the relation between the amount of pepsin used, and the amount of nitrogen in the solution the tests were also made using half the amount of pepsin. While more experiments are necessary for this purpose it is interesting to note that with amounts of "1–3000" pepsin ranging from 1 Mg. to 2 Mg. the ratio of pepsin to nitrogen in the solution is fairly constant.

The results obtained in duplicate experiments made on different days agree to within 0.4 Mg. The results given in Table No. 2 are the average of two or more duplicate experiments. It was found that when no pepsin was used the acid alone effected the dissociation of the albumins to a certain degree, 11.7 Mg. of nitrogen being found in the solution after filtration. In tabulating our results this amount has been subtracted from the total amounts of nitrogen found, so that in Table No. 2, are shown only the amounts of nitrogen due to the pepsin itself.

TABLE II.

Number of Pepsin.	Amount of Nitrogen Obtained Using 1 Mg. of Pepsin.	Amount of Nitrogen Obtained Using 0.5 Mg. of Pepsin.	Amount of Nitrogen Obtained Using 0.2 Mg. of Pepsin.
Blank in which no pepsin is used	11.7 Mg.		
1	33.3 Mg.	12.3 Mg.	
2	31.3 Mg.	10.3 Mg.	
3	24.7 Mg.	8.3 Mg.	
4	31.0 Mg.	10.1 Mg.	
5	25.3 Mg.	7.7 Mg.	
6	20.2 Mg.	6.6 Mg.	
7	24.3 Mg.	6.2 Mg.	
8	32.6 Mg.	8.7 Mg.	
9	32.9 Mg.	8.9 Mg.	
10	45.8 Mg.	18.0 Mg.	
11	59.1 Mg.	29.9 Mg.	
12	42.4 Mg.	15.0 Mg.	
13	37.8 Mg.	17.0 Mg.	
14	52.9 Mg.	28.4 Mg.	
15	73.4 Mg.	47.1 Mg.	30.5 Mg.

In order to find what relation existed between the amount of nitrogen in solution and the strength of the pepsin as determined by the official test, it was necessary to apply this method to the same samples of pepsin. It was decided, also, to compare the methods of the United States Pharmacopœias of 1890 and 1900. In conducting these tests every detail was carried out as directed. The acid solutions were accurately made up by titration against standard alkali. The eggs used were never more than a few days old. The bottles, containing the mixtures for digestion, were completely immersed in water, which was kept in motion by a propeller-shaped stirrer, and maintained at a practically constant temperature, except that when the bottles, which were at room temperature, were placed in the water, its temperature was lowered about ¼°, this lasted but a few minutes, and was followed by a rise above the normal temperature of somewhat less magnitude. After this fluctuation, caused by introducing the cool bottles, the temperature became constant. The bottles were enclosed in a box of coarse wire screen so arranged that all the bottles could be inverted, without being removed from the water, by pulling a string.

Neither of the methods gave uniform results; this is probably due, in part, to variations in the composition of the white from different eggs. In making the test as directed in the Pharmacopœia of 1890, the temperature was maintained at 40° C. In the method of the Pharmacopœia of 1900, cylinders of different lengths were tried, but, as the lengths of the cylinders seemed to have little or no effect on the results, cylinders about 60 Cm. long were used in most of the tests, the amount of sediment being more easily estimated.

TABLE III.

METHOD OF THE PHARMACOPŒIA OF 1890.

Number of Pepsin.	Concentration and Result.	Concentration and Result.	Concentration and Result.	Concentration and Result.	Concentration and Result.
1	1–2000 dissolved.	1–2000 dissolved.	1–2000 dissolved.	1–2500 large residue.	1–3000 residue.
2	1–2500 dissolved.	1–2500 dissolved.	1–2500 dissolved.	1–3000 residue.	
3	1–1500 dissolved.	1–1500 dissolved.	1–1500 dissolved.	1–3000 very large residue.	
4	1–1500 dissolved.	1–1500 dissolved.	1–2000 residue.	1–3000 very large residue.	
5	1–1500 dissolved.	1–1500 residue.	1–1500 dissolved.	1–1500 dissolved.	1–3000 large residue.
6	1–2000 dissolved.	1–2500 dissolved.	1–2500 residue.	1–2500 dissolved.	1–3000 residue.
7	1–2000 dissolved.	1–2000 dissolved.	1–2000 dissolved.	1–3000 large residue.	
8	1–2000 dissolved.	1–2000 dissolved.	1–2000 dissolved.	1–3000 large residue.	
9	1–2500 dissolved.	1–2500 dissolved.	1–3000 residue.	1–3000 dissolved.	
10	1–2500 dissolved.	1–2500 dissolved.	1–3000 residue.	1–3000 dissolved.	1–3000 dissolved.
11	1–6000 dissolved.	1–6000 dissolved.	1–6000 dissolved.	1–7000 residue.	1–7000 dissolved.
12	1–2500 dissolved.	1–3000 dissolved.	1–3000 residue.	1–4000 residue.	1–6000 large residue.
13	1–2500 dissolved.	1–2500 large residue.	1–2500 residue.	1–3000 residue.	1–6000 very large residue.
14	1–5000 dissolved.	1–5000 residue.	1–5000 dissolved.	1–5000 dissolved.	1–6000 residue.
15	1–15000 dissolved.	1–15000 residue.	1–15000 dissolved.	1 15000 dissolved.	1–20000 dissolved.

TABLE IV.

METHOD OF THE PHARMACOPŒIA OF 1900.

No. of Pepsin.	Concentration and residue.	Concentration and residue.	Concentration and residue.	Concentration and residue.	Concentration and residue.	Concentration and residue.	Concentration and residue.	Concentration and residue.
1......	1-3500 1 Cc.	1-3500 0.5 Cc.	1-3500 0.5 Cc.	1-4000 0.8 Cc.	1-4500 1 Cc.	1-4500 1 Cc.		
2......	1-4000 1 Cc.	1-4000 1 Cc.	1-4000 1 Cc.	1-4000 0.5 Cc.	1-4000 0.8 Cc.	1-4000 0.7 Cc.	1-4000 0.2 Cc.	
3......	1-3000 2 Cc.	1-3000 0.8 Cc.	1-3000 2 Cc.	1-2500 1 Cc.	1-2500 2 Cc.	1-2500 1 Cc.		
4......	1-2000 0.5 Cc	1-2500 0.5 Cc.	1-3000 1 Cc.	1-3000 1 Cc.	1-3000 2.5 Cc.	1-3000 2 Cc.		
5.....	1-2000 0.7 Cc.	1-2000 0.7 Cc.	1-2200 1 Cc.	1-2200 2 Cc.	1-2200 1 Cc.	1-2500 1.5 Cc.	1-2500 1.5 Cc.	
6......	1-2500 0.2 Cc.	1-3000 1 Cc.	1-3000 1 Cc.	1-3000 1 Cc.	1-3000 1.5 Cc.	1-3500 1 Cc.	1-3500 1 Cc.	
7......	1-3000 2 Cc.	1-3000 0.2 Cc.	1-3000 1 Cc.	1-3000 1 Cc.	1-3000 0.8 Cc.	1-3000 1.5 Cc.		
8......	1-3000 1.5 Cc.	1-3000 0.5 Cc.	1-3000 1 Cc.	1-3000 1.5 Cc.	1-3000 1.5 Cc.	1-3500 1.5 Cc.		
9......	1-3500 0.5 Cc.	1-4000 1 Cc.	1-4000 0.5 Cc.	1-4000 0.5 Cc.	1-4500 0.5 Cc.	1-4500 0.8 Cc.		
10......	1-3500 0.7 Cc.	1-4000 0.5 Cc.	1 4000 0.7 Cc,	1-5000 1 Cc.	1-5000 0.3 Cc.	1-5000 0.3 Cc.		
11......	1-8000 1 Cc.	1 8000 0.8 Cc.	1-8000 0.5 Cc.	1-9000 1 Cc.	1-9000 0.3 Cc.	1-10000 0.5 Cc.	1-10000 0.5 Cc.	
12......	1-4000 0.5 Cc.	1-4500 0.3 Cc.	1-5000 2 Cc.	1-5000 1 Cc.	1-5000 0.2 Cc.			
13......	1-4000 1 Cc.	1-4000 0.7 Cc.	1-4000 1 Cc.	1-4000 1 Cc.	1-4500 0.2 Cc.	1-5000 3 Cc.		
14......	1-6000 1 Cc.	1-6000 2 Cc.	1-6000 0.7 Cc.	1-6000 0.5 Cc.	1-7000 1 Cc.	1-7000 1 Cc.	1-7000 1 Cc,	
15......	1-15000 2 Cc.	1-15000 1 Cc.	1-15000 1 Cc.	1-15000 1 Cc.	1-15000 2 Cc.	1-15000 2 Cc.	1-20000 3 Cc.	1-20000 3 Cc.

The average results of each of the methods are shown in the table number 5.

TABLE V.

Number of Pepsin.	Average Result of 1890 Method.	Average Result of 1900 Method.	Average Amount of Nitrogen in Solution Using 1 Mg. of Pepsin.
1................	1-2000	1-4500	33.3 Mg.
2................	1-2500	1-4000	31.3 Mg.
3................	1-1500	1-2500	24.7 Mg.
4................	1-1500	1-3000	31. Mg.
5................	1-1500	1-2200	25.3 Mg.
6................	1-2500	1-3000	20.2 Mg.
7................	1-2000	1-3000	24.3 Mg.
8................	1-2000	1-3000	32.6 Mg.
9................	1-3000	1-4500	32.9 Mg.
10................	1-3000	1-5000	45.8 Mg.
11................	1-7000	1-10000	59.1 Mg.
12................	1-2500	1-5000	42.4 Mg.
13................	1-2000	1-4000	37.8 Mg.
14................	1-5000	1-7000	52.9 Mg.
15................	1-15000	1-15000	73.4 Mg.

It will be seen from this table that no definite relation exists between the pharmacopœial methods of 1890 and 1900, although in general the strength as shown by the method of 1890 is only about two-thirds of that shown by the method of 1900. Neither is there any definite relation between the strength as shown by either of these methods and the amount of nitrogen found in solution by the method we have described.

Such expressions as 1 to 3000 in describing the strength of a pepsin are purely arbitrary and should be abandoned. Some method of pepsin-testing should be adopted by which the results can be definitely stated.

In using the method described in this paper, the requirement could be made of not less than a given amount of nitrogen in the solution.

It is too soon to propose any definite standards of this kind, but a proper standard could be easily found by testing the various pepsins on the market.

Indianapolis, Ind., August, 1906.

The paper just read was received and referred.

Mr. C. B. Lowe presented for the author, who was not present, a paper by Mr. S. K. Kahn, of Philadelphia, on the detection of copper and iron in glycerin:

A NEW DELICATE TEST FOR THE DETECTION OF TRACES OF COPPER AND IRON.

BY S. K. KAHN, PH. D.

Quite recently during the preparation of a portion of glycerin suppository mass by heating together glycerin, stearic acid and sodium carbonate, it was observed that upon heating the stearic acid and glycerin while stirring, the former assumed a very pronounced greenish-blue coloration. This was the more surprising since both the glycerin and stearic acid had previously answered all the standard tests in general use for purity. From this fact it was at first thought that the stearic acid had absorbed from the glycerin a trace of some blue coloring-matter, added to it in order to cover up some defect in its color, a practice frequently resorted to, particularly by refiners of sugar. A series of experiments, however, carried out with various colors that might have been used for this purpose proved this assumption to be erroneous, inasmuch as stearic acid showed no tendency at all to extract any of these colors from either an aqueous solution or from their solution in glycerin; and later developments in the case showed that as a matter of fact the greenish-blue coloration observed in the preparation of the glycerin mass was the result of an entirely different cause, and was due to the presence of minute quantities of copper in the glycerin used. The glycerin in question had been distilled in a still with a copper condenser and had absorbed a sufficient amount of the metal to impart a distinct greenish-blue color to the stearic acid. The quantity of dissolved copper being naturally very small, (in fact so small as to escape detection by means of the hydrogen sulphide or the potassium ferrocyanide test,) suggested the possibility of utilizing this reaction as a very delicate test for the detection of copper; and as a matter of fact the results obtained have been so satisfactory as to induce the writer to make them known more generally, feeling assured that the stearic acid test will prove a neater, quicker and more accurate test than the majority of those in use heretofore. The writer is of the opinion that this new test will be very serviceable for the detection of traces of copper in various pharmaceutical preparations, and hopes it may find recognition for that purpose in the next revision of the U. S. P.

As the amount of copper present in a glycerin distilled in a copper still is, at the extreme, only trifling—in fact so small as to escape detection by the tests in ordinary use—the hasty conclusion might be drawn that so small a quantity cannot possibly be objectionable or cause trouble in any pharmaceutical preparation. As a matter of fact, however, even as small an amount as present in glycerin of this kind may give rise to serious trouble in cases where the glycerin is used in preparations containing strong reducing agents, particularly hypophosphites or hypophosphorous acid. Although not apparent at first, after a lapse of several weeks or months, particularly when exposed to the sunlight, a very faint brick-red discoloration will be noticed which appears to be a colloidal suspension of a minute trace of cuprous hydride, which according to Wurtz results from the action of hypophosphorous acid or hypophosphites on sulphate of copper, and very much resembles the well-known cuprous oxide precipitate obtained in Fehling's test. This clearly demonstrates the importance of having a quick and delicate test for the detection of minute traces of copper in glycerin as well as various other pharmaceutical chemicals, and the writer considers this new stearic acid test as the most easily applied for this purpose. The great delicacy of this test is no doubt due to two causes; first, to the formation of stearate of copper of a very high tinctorial power, and next to the concentration of the copper of a comparatively large amount of liquid under examination in a much smaller bulk of stearic acid. The test as carried out by the writer is as follows:

Heat over a small Bunsen burner in a test-tube of sufficient size 30 Cc. of the liquid under examination with two grams of stearic acid for five minutes, shaking constantly. Set the tube aside to allow the stearic acid to rise to the surface, and allow the tube to stand sufficiently long for the stearic acid to solidify. Remove the stearic acid disc from the tube by means of a bent wire, and compare it on a white background with a disc made in a similar way with pure distilled water free from copper. The most minute trace of copper will be easily shown by a more or less bluish-green discoloration of the stearic acid. This discoloration is already noticeable in the liquid stearic acid before congealing, and then can be seen almost as plainly as after solidifying. Care should be exercised in the selection of the stearic acid used for this test. The writer has, contrary to expectation, found the C. P. stearic acid entirely unsuitable for the purpose, nearly every sample which he secured from various sources being so discolored as to be of no use at all for such a delicate test as the one in question. The most suitable material for this test appears to be a good grade of stearic acid of the U. S. P. purity, and as white in color as obtainable. Owing to the solubility of stearic acid in alcohol this test cannot be directly applied to alcoholic liquids, from which the alcohol is first to be removed by evaporation, and the residue redissolved in water or acidulated water before applying the test.

Aside from the great delicacy of this test it is extremely valuable from another point of view, in that the stearic acid discs form permanent records which may be kept indefinitely for comparisons or any other future reference.

As far as the sensitiveness of the test is concerned a strong blue discoloration of the stearic acid discs can be observed in solutions containing as little as one part of metallic copper in two hundred thousand parts of solution, and in a dilution of one to eight hundred thousand a greenish-blue cast is still distinctly noticeable. From this point on, however, it becomes necessary to compare the discs with blank disks made with pure distilled water, and although the difference is only very slight it is possible to detect with a fair degree of accuracy as little as one part of copper in one million parts of solution. This forms the limit of delicacy of the test. Various authorities which the writer consulted give the limit of sensitiveness of the hydrogen sulphide, potassium ferrocyanide and ammonia tests as about one part of metallic copper in one hundred thousand parts of solution. Lack of time in preparing this paper has prevented the writer from carefully studying the delicacy of these and various other tests proposed for the detection of copper in comparison with his own, a question which he intends to take up at the first opportunity. It was of course of interest and importance to determine how various other metallic salts would react with stearic acid and how they would influence the results of the copper test. Those strongly-colored metallic salts, like the salts of nickel, cobalt and chromium, which the writer feared might cause complications, gave in one per cent. solutions only very faint reactions, and in a solution of one part of salt in ten thousand parts of solution, they showed no noticeable discoloration of the discs at all, being thereby eliminated as disturbing factors. The only other metallic salts which the writer has found to give delicate reactions with stearic acid are the salts of iron, which either as ferric or ferrous salts impart a yellow color to the discs, the delicacy of the test being great enough to detect one part of metallic iron in about eight hundred thousand parts of solution. This new test is therefore equally well adapted for the detection of traces of iron. It is very likely that the stearic acid test will prove very serviceable for a colorimetric estimation of traces of copper and iron by comparing the discs obtained with standard discs made with solutions of known strength. Lack of time has so far prevented the writer from examining this question, which, however, he expects to make the subject of future investigations.

The Chair, discussing the paper just read, said that all had doubtless frequently examined potassium iodide by the known test for potassium iodate, and that he had reason to believe from some experiments made by a friend in St. Louis that the reaction was not due at all to the potassium odate but to the presence of a small amount of iodide of copper which has been decomposed, and the free iodine imparts color to the solution. In answer to a question by Mr. Kebler, the chair said he did not mean to say the color developed in every case was due to the iodine, because there are cases where the iodate is present, but he did hold that there were cases where a color exactly like that is given, which is due to free iodine, or caused from the decomposition of iodide of copper in small quantities. He did not give this from his own personal experience, but got the information from another chemist.

Mr. Kebler said that it had been his experience that frequently a strong solution of potassium iodide, when acidulated with hydrochloric acid, would turn yellow, or a brownish yellow, and the conclusion is frequently jumped at that this is iodine, due in a large number of cases to an iodate but not always. Mr. Kebler then referred to the point made in the paper that a very pure article of stearic acid must be used, and inquired whether the stearic acid at present available on the market came up to the U. S. P. standard. He said he knew it was formerly very hard to get. The Chairman replied that in the last year he had examined two or three samples, and they did comply with the requirements.

The Chair next called for a paper by Mr. Sayre, of Kansas, on Cactus Grandiflorus, and the author presented the paper in abstract.

CACTUS GRANDIFLORUS.

BY L. E. SAYRE.

Few unofficial plants have attained greater distinction than the well-known night-blooming cereus. The therapeutical property, especially extolled by the medical fraternity, is that of its alleged action in the functional disorders of the heart. The pharmacologist and rational therapeutist have asked the question whether the reputed value of this drug was due to its intrinsic merit or to the persuasive powers of the physician. The committee, in its preparation of the 8th revision of the U. S. Pharmacopœia, suggested that an inquiry be made as to the claims which cactus seemed to have for a position among the official drugs and preparations. The drug was voted out of the official list, but the question was not settled as to the merits of the medicinal agent. As a member of the sub-committee on pharmacognosy, who was given the problem to study, it has seemed desirable to examine cactus from a physiological as well as a chemical point of view.

One of the first difficulties in the examination has been to obtain a supply of reliable material. It has taken some time to accomplish this. Not until last winter was I fortunate enough to obtain, through the assistance of Professor J. U. Lloyd, a good supply. Cactus grandiflorus could be obtained from green-houses, but we were informed that the preparations of the drug—those which had special medicinal value—were made from the products of open-air plants grown in tropical countries. Among the cactus plants of tropical climates it is stated there are a number of species and varieties obtainable, some of these being comparatively valueless. The proper drug in prime condition is said to be not easily obtained. Having no means of identifying the genuine drug it was fortunate that I could rely for authentic material upon one who was so familiar with the source of supply. The material sent us for study consisted of green stems of the plant, such as are used in making the tincture of cactus. A tincture of the flowers is made and employed in the same doses and for the same purposes as the tincture of the stems. We have had no opportunity of examining, chemically, the flower and its preparations. The stems received by us were green, angular and branching, from 4- to 6-angled. They were quite cellular, soft, and very mucilaginous. The stems were sliced into thin sections and immediately placed in sufficient alcohol to cover the resulting mass. Some of the sliced stems were beaten in a mortar with a small quantity of water, which produced a thick viscid magma, or ropy mucilage of the consistence of the white of egg or thicker. It became evident that alcohol was the only menstruum applicable for the extraction of the drug. This solvent, however, is highly diluted in the process of extraction by the constituent water; and the hydroalcoholic menstruum, resulting from this dilution, seems sufficient to extract the minute quantity of resinous constituent, which by some is supposed to contain the important medicinal qualities.

A microscopical examination of the stems has been made by Mr. Charles Sterling. His report of the structure was published in the Druggists' Circular, August, 1906, p. 283. Prof. J. U. Lloyd has very materially contributed to the literature concerning this drug. One of the contributions being Drug Treatise, No. 2 (Lloyd Bros., Cincinnati, Ohio). We have stated that the drug stems contain a large percentage of water. The sliced drug when placed in a drying-oven and kept at a temperature of 100° C. until it ceased to lose weight, lost on an average, 95.25 per cent. of moisture. A tincture made by simply covering the sliced drug with alcohol, allowing the mixture to stand for 15 days, decanting the liquid and filtering, contained 0.854 per cent. of extractive dried at a temperature of 100° C. A tincture of cactus grandiflorous recognized as a typical tincture of this drug by physicians, examined in the same way, gave 9.732 per cent. of dry extractive. A homeopathic mother-tincture, also purchased in the market, contained 0.38 per cent. of dry extractive. If this drug has the heart action as reputed, because of the small per cent. of dry extract, it certainly must contain an excessively strong active principle. The homeopathic extract, for example, contains 0.38 per cent. If we allow 2 per cent. of this to be active principle, we should then have here represented a remarkably low percentage (9.0076 per cent.) of active principle. Allowing that this active principle is the cause of the heart action alleged for the drug, we would certainly have here represented a most remarkable preparation.

As to the constituents of cactus, Kunze has stated that the inorganic constituent is calcium oxalate, and that the acid juice is dependent on tartaric acid for its acidity; the watery juice certainly has a decided acid reaction to litmus paper, and under the microscope it is seen that the the thin-walled parenchyma cells contain crystals of calcium oxalate of the prismatic and acicular forms. A tincture, made by us from the sample above referred to, on evaporation in a flat-bottomed crystallizing dish, gave an abundance of beautifully-formed crystals which, on examination, proved to be inorganic, and while a quantitative examination has not yet been made, they seemingly consist, for the most part, of salts of potassium.

A nitrogen determination of the dried and powdered stem produced by the Kjeldahl process an amount of nitrogen which, calculated into protein, was 13.312 per cent., about the percentage of protein contained in ordinary food cereals. The ash from the powdered stem amounted to 1.46 per cent., of which 69 per cent. was soluble in water, showing an abundance of alkaline material. We have not been able to give any further attention to the constituents,* but have endeavored to secure a physiological investigation. For this purpose, preparations of the drug of definite strength were submitted for treatment. The preliminary experiments upon a frog gave upon the whole unsatisfactory results. When applied directly to the exposed heart of the frog there seemed to be no perceptible reaction. Upon the introduction of a subcutaneous injection into the dorsal lymph space, an action seemed to be apparent. There was seemingly an increase in the amplitude of the heart, and an indication of a strengthened beat or increased force. The preliminary physiological experiments, upon the whole, indicated that the cardiac action was slight and uncertain. We concluded, therefore, to submit preparations of cactus, such as we had called " unknowns " in our laboratories, to a thoroughly equipped laboratory, devoted to drug-studv. For this special study I am indebted to Dr.

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* Working with small quantities (10 Gm.) no evidence of alkaloid has thus far been shown. In future we shall be able to work in much larger quantities.

E. M. Houghton (Department of Experimental Medicine, Parke, Davis & Co.), who, recognizing that the work should be done for a paper to be presented before this Association, wrote me in a letter dated July 20th, as follows:

"The work I have done indicates that the physiological action is practically nil, and it would seem to me quite desirable that, in presenting the results before the Pharmaceutical Association you show the tracings in detail, which are very convincing. I intend to make a summary of results in the form of a table that will readily show the action of the drug."

DR. HOUGHTON'S RESULTS AS SUBMITTED BY HIMSELF.

Returning to the question which was intimated in the beginning of this paper whether the drug should be made official in the U. S. Pharmacopœia I should state that, aside from physiological considerations, there are many reasons why the drug should not be made official. Among the principal objections are the uncertainty of the supply of reliable material, the difficulty of identifying the material, and the fact that the fresh drug rapidly deteriorates. The green stems, saturated with water and mucilaginous decomposable material, soon soften and deteriorate. The same may be said of the partially dried stems. The constituents are such as to promote decomposition or instability of delicate organic chemical elements. If a preparation of the drug were made official we should in all probability find that the general formula for the preparation of tinctures of green herbs (Tincturæ Herbarum Recentium) would not be applicable. The proportion of cactus to that of alcohol would have to be greater than is prescribed by that formula.

CACTUS GRANDIFLORUS–EXPERIMENT I.

	Time.	Blood Pressure.	Pulse Rate.	Amp.	Treatment.	Remarks.
1½ hour.	11.15	33	116	58	Normal.	
	11.16				5 Cc. tinct. C. G. inj. in femoral vein.	
	11.16–5	39	118	57		Transient rise in B. P.
	11.22	34	116	58		
	12.45	40	116	50		Just before this reading was taken B. P. was down for a short time to 30,
33	12.46				5 Cc. Tr. No. 1 in F. V.	
	12.47	37	120	50		
	12.52	35	120	50		
	1.19	35	120	48		
24	1.20				5 Cc. Mother Tr. C. G.	
	1.21	35	120	48		
	1.25	35	116	48		
	1.54	34	120	48		
15	1.55				10 Cc. Tr. No. 1 F. V.	
	1.56	33	120	50		
	2.01	32	118	48		
	2.10	35	116	48		

¾	2.11				10 Cc. Tr. C. No. 3.	
	2.12	28	120	56		
	2.56	38	128	48		
13	2.57				25 Cc. Tr. No. 1 C.	
	2.58	35	126	47		
	3.10	38	114	45		
5	3.11				20 Cc. Tr. No. 3.	
	3.12	30	120	50		B. P. fluctuating.
	3.17	36	120	45		

EXPERIMENT 2.

13	9.26	18	124	50	5 Cc. Tr. No. 1 in F. V.	
	9.27				5 Cc. Tr. No. 1 in F. V.	Normal.
	9.28	18	124	51		
	9.33	18	120			
	9.39	21	126	48		
12	9.40				5 Cc. Tr. No. 2 in F. V.	
	9.41	21	126	50		
	9.46	20	125	49		
	9.52	20	126	50		
25	9.53				5 Cc. Tr. C. No. 3 in F. V.	
	9.54	21	126	54		B. P. fluctuating.
	9.59	23	126	53		
	10.18	18	130	49		
25	10.19				5 Cc. Mother Tr. C. in F. V.	
	10.20	17	130			
	10.25	17	128	46		
	10.44	16	126	50		
20	10.45				25 Cc. No. 1 Tr. C. in F. V.	
		15	125	50		
	10.51	15	124	50		
	11.05	17	124	52		
	11.06				25 Cc. Tr. C. No. 2 in F. V.	
	11.07	17	122	60		
	11.13	15	120	52		
	11.17	17	120	50		
	11.18				10 Cc. Tr. C. No. 3 in F. V.	
	11.19	18	118	52		B. P. fluctuating.
	11.24	15	116	55		
	11.37	16	120	52		
					7 Cc. Mother Tr. C. in F. V.	
	11.38	15	120	50		
	11.45	15	122	55		

Mr. Sayre called on Mr. Reid Hunt to explain some tracings made by Dr. Houghton, of Detroit, showing the results of his physiological experiments with the drug. Mr. Hunt showed from these tracings that this drug had no effect upon the heart, being in marked contrast in this respect with drugs properly belonging to the digitalis group. His own experiments had confirmed this view. He did not deny, however, that the drug might have some therapeutic effect, and it was a fact that, in very large doses, it did affect the kidneys.

Mr. Sayre said if one would read the *Medical Review* he would find an entirely different view taken of this drug, most of those who claimed to know, holding that it had a decided effect in certain disorders.

Mr. Lowe said that Dr. Horatio Wood, one of the finest physicians in the country, claimed, as he remembered, that the drug was almost wholly worthless.

Mr. Lyons declared that cactus did not belong at all to the digitalis class, did not act in the same way, and had very little toxic action—though it would become toxic if given in sufficiently large doses, and would ultimately act on the heart. The question of whether this drug should be introduced into the Pharmacopœia did not depend upon the question of whether it was easy to get, or whether it could be gotten at all times of the year. Fresh corn-silk is not to be gotten except for a very short season in the year, but it is certainly not to be excluded from the Pharmacopœia on that account, if it is acknowledged to be a valuable remedy. The identity of the cactus obtainable cannot be satisfactorily established at the present time; but this is also true of drugs growing right in our own country. He did not think this drug had as yet received sufficient notice or endorsement from the medical profession to warrant its introduction into the Pharmacopœia.

Mr. England said it was difficult to get the tincture of cactus grandiflorus, in view of the large number of species of cactus and the confusion in the commercial supply.

Mr. Lyons said he thought there was very little cactus grandiflorus actually on the market.

The General Secretary remarked that several authors make the claim that the flowers are really the part to be desired, and not the stem, and asked Mr. Sayre about this. Mr. Sayre replied that, while he had referred to the flowers in his paper, the physiological experiments did not apply to the flowers. He further said that in correspondence with those who had used the flower, they claimed that they got better results from the stem, and he did not see himself why the flower should be better.

The Chair said the paper would be received and referred.

Mr. William Mittelbach then presented the substance of the following paper on Methylene-Blue, handing around among the members half a dozen color-cards showing the difference in results attained where pure methylene-blue was used as compared with that adulterated with dextrin.

COLOR TEST FOR METHYLENE-BLUE.

BY L. N. SAHM AND WM. MITTELBACH.

The coloring power of methylene-blue, when adulterated which it frequently is, is lessened in proportion to the amount of adulterant used. It is therefore less useful as medicine, and very much so as a dye. Dextrin is most generally used for cheapening this blue, and can be readily detected by washing all the blue out with pure wood alcohol, leaving as residue the insoluble dextrin, slightly colored, but readily recognized by rubbing some between your fingers, when the characteristic starchy property is detected. It seems therefore that a color-test would greatly help in determining the strength or purity of the blue. The following simple test is offered. Take 2 grams of pure cellulose—preferably in the form of white filter-paper—cut or tear the paper into small pieces, place in a strong wedgewood mortar, add a small quantity of warm water, and beat into pulp. Place this into a bottle or flask, and add enough water to make the mixture measure 100 Cc. and shake thoroughly! Then by means of a graduated pipette, add 4 Cc. of a $\frac{1}{5}$ per cent. aqueous solution of methylene-blue. Again shake the mixture well, so as to distribute the blue evenly throughout the mass. To this add 20 Cc. of a mordant composed of a solution of a $\frac{1}{5}$ per cent. solution of tannin and $\frac{2}{5}$ per cent. sodium acetate, in water. Again shake the mixture! It is now ready for converting into paper again. A mould is made by taking the body of a seidlitz-powder box (paper or tin) removing the bottom, and placing it over a piece of filter-paper, the whole resting on a wire draining-board. The filter-paper will allow the excess of water to drain or filter off, leaving the pulp in the box. The mixture of colored pulp is now poured into the mould and allowed to stand until the excess of water has passed through the filter-paper at the bottom of the mould. It is then dried by placing between blotting-papers, and placed under a heavy weight, leaving it there until dry. By changing the blotting-papers, occasionally the drying process is hastened. The pulp has again been converted into paper, and is of the texture and firmness of ordinary blotting-paper. Comparing the color of this paper with a sample prepared by the same method from a known full strength methylene-blue, a difference in the shade of blue will at once indicate the approximate strength of the blue under investigation. When the adulterant is present in large quantities, the difference in color is very apparent.

Lignin can be used instead of cellulose, but the result is not as satisfactory.

Mr. Francis, of Detroit, discussed the paper, and stated that while the color manufacturers disavowed the charge of adulteration, practically all the methylene-blue sold on the market was adulterated—or diluted—with 25 or 30 per cent. of soluble dextrin. The manufacturers claim that they dilute not only methylene-blue, but practically all the aniline dies, by means of a soluble diluent, because of their intense color-power, claiming that it is necessary to reduce it to make it practically useful. It is very difficult to get on the market a methylene-blue which is free from this or a similar diluent—almost impossible, without paying an extraordinary price, to obtain the crystalline substance.. But the principal objection to the market product is, that it is hard to find it free from soluble zinc salts, which are specially objectionable when administered in large doses internally, as it generally is. This is not objectionable in dyeing, however, and very much the larger proportion of methylene-blue is used for that purpose.

Mr. Vanderkleed said he had not found the product used for medicinal purposes to contain any zinc salts. He had not tested for the most minute traces, however. Answering an inquiry by Mr. Sayre, as to whether the U. S. P. test for zinc was satisfactory, he said he thought it evidently was, because the samples on the market that he had found did not give the test for zinc.

Replying to a question by Mr. Kebler as to what price the various houses would name on an order for methylene-blue, Mr. Francis said he was not prepared to answer off hand, but the pharmaceutical houses would not supply the crude methylene-blue for dyeing purposes, but a refined product. This refined product would differ greatly, however, from the crystalline product, which would come at a very high price—five or six dollars per pound, as compared with a dollar and a half, say, for the fine commercial article. Mr. Kebler said this coincided with his experience in the matter.

Mr. Whelpley, of St. Louis, said that the remarks of Mr. Francis about the claim of the manufacturers, that pure methylene-blue was not placed on the market because it was too strong, reminded him of a paper on mustard, read by Mr. Lloyd before the Section some years ago, in connection with which he showed samples of "table mustard," "commercially pure," "strictly pure" and "absolutely pure" mustard, the "absolutely pure" mustard containing quite a per cent. of flour, which the manufacturers told Mr. Lloyd it was necessary to put in it, because it would be too strong without it. What applied to a food product in that instance seemed to apply in this case to a medicinal substance. Mr. Whelpley went on to say that he believed it was in microscopic work that these aniline dyes were first used, and the price in those early days was almost fabulous as compared with the commercial article of to-day. He remembered when samples of pure aniline dyes were first brought to St. Louis for use in microscopical work, and they were looked upon very much as cocaine and its salts when it first appeared, as something to be used with extraordinary caution, on account of the expense.

Mr. Vanderkleed presented in abstract the following paper on granular salts:

METHODS FOR THE ANALYSIS OF GRANULAR EFFERVESCENT SALTS.

BY CHARLES E. VANDERKLEED AND JOSEPH L. TURNER.

Little has been written concerning methods for the analysis of granular effervescent salts—to which fact may be assigned the possible reasons—namely—a former lack of interest in the analysis of these products—and the fact that, for the determination of the important constituents of some of them, as for example, lithia in granular effervescent lithium citrate, no special deviations from the usual methods of analysis are required. On the other hand, the complete analysis of any given granular effervescent salt presents peculiar difficulties, and the whole subject is one of utmost importance in the manufacturing house where the quality of each lot made must be insured by chemical tests. The object of the authors, therefore, in presenting a paper on this subject is to direct the attention of analysts to these difficulties, with the hope that improved methods may in due course of time be the result.

A granular effervescent salt, as it is marketed, is a peculiarly complex mixture of organic acids, alkaline carbonates, alkaloids, carbohydrates, etc., portions of which have already partially acted upon each other chemically during the process of the manufacture, and the whole mixture remains in a state of unstable equilibrium, so to speak, ready to continue its chemical changes on exposure to air and moisture. It is therefore desirable, in the analysis of such a product, to be able to state with approximate accuracy the amounts of the various ingredients actually used in the manufacture of the salt. And herein lies the difficulty. For example, if the amount of sodium bicarbonate used in the manufacture of the official effervescent sodium phosphate be calculated from the amount of potential carbon dioxide remaining in the mixture, the result will, of course, be too low, as it does not take into account the amount of sodium bicarbonate which reacted with the acids during the process of granulation. On the other hand, if the sodium bicarbonate be calculated from the amount of sodium carbonate obtained by igniting a portion of the salt, the sum of the results of the analysis will give a result considerably higher than 100 per cent., but from the difference between the two figures for the sodium bicarbonate may be calculated the loss of carbon dioxide during the process of granulation.

With the ever-increasing popularity of this class of preparations, and the many substances and combinations now exhibited in this form, no set rules or series of methods can be expected to answer for the analysis of all effervescent salts. Special modifications will always have to be devised to meet peculiar conditions. We wish only, therefore, to present in detail the methods used by us for the analysis of a number of commercial samples of "granular effervescent caffeine hydrobromate." * A few general observations, however, may not be out of place in this introduction.

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* (Attention might be called to some interesting information brought out by our analyses, if our paper were concerned with the results instead of with methods only. That salts on the market, called by the same name, and, in the eyes of the medical profession and the public, identical, should vary in strength from 2 grains of caffeine per dose given on the label, down to $\frac{1}{16}$ grain, is a matter that suggests itself to us as suitable for recommending to the Drug Laboratory of the Bureau of Chemistry at Washington for investigation.)

For the determination of inorganic bases, such as sodium and magnesium, the usual methods of analysis may be employed after destruction of the organic acids, etc., by ignition.

For the determination of phosphoric acid in granular effervescent sodium phosphate, however, it is necessary to use means other than ignition to destroy the organic acids, since by the latter method the phosphate is converted into pyrophosphate, the magnesium salt of which is amorphous and flocculent rather than crystalline, and is not sufficiently insoluble in dilute ammonia water to admit of accurate estimation. Treatment of the salt with concentrated sulphuric acid affords an excellent means for preparing the materials for the determination of phosphoric acid as magnesium pyrophosphate.

For the determination of acetanilid in that class of salts which may be designated as granular effervescent headache remedies, attention is directed to the excellent papers by W. A. Puckner, Proceedings of the American Pharmaceutical Association, vol. 53, pp. 289 and 292. The accuracy of these methods is liable to disturbance only by the slight solubility of citric and tartaric acids in chloroform, control of which could be secured by titration.

THE ANALYSIS OF "GRANULAR EFFERVESCENT CAFFEINE HYDROBROMATE."

Effervescent "caffeine hydrobromate" is prepared from tartaric acid, citric acid (crystalline), sodium bicarbonate, caffeine, sodium bromide and sugar.

The following determinations were made:

I. The caffeine, sodium bromide, sugar and carbon dioxide were determined by direct methods.

II. The total tartaric acid, *i. e.*, both that which was left free, and that which was conbined when the salt was dissolved, was determined by a direct method.

III. The total acids left free when the salt was dissolved were determined directly, the results being expressed as equivalent of normal potassium hydroxide solution.

IV. The total acids which were combined when the salt was dissolved were determined from the alkalinity of the ash obtained by evaporating the solution to dryness and igniting the residue, the results being expressed as equivalent of normal potassium hydroxide solution.

V. The sum of total acids was calculated by adding result III to result IV. (The sum V is the same, regardless of whether, in dissolving the mixture, normal salts and free acids are formed, or whether acid salts and free acids are formed, or whether normal and acid salts and free acids are formed.)

VI. The total citric acid was calculated from the difference between the

the sum of total acids (V) and the total tartaric acid determined directly (II).

VII. The sodium bicarbonate left uncombined during the process of granulation was determined by calculation from the amount of potential carbon dioxide found.

VIII. The sodium bicarbonate originally used in the manufacture of the salt was estimated by calculation from the alkalinity of the ash obtained by evaporating the solution to dryness and igniting the residue.

The sodium bicarbonate which has entered into combination with the tartaric and citric acids during the process of granulation is represented by the difference between results VII and VIII, each molecule of sodium bicarbonate so combined having furnished one atom of sodium which is retained in the granulation, and one molecule each of carbon dioxide and water (one hydrogen atom coming from the acid, which is not retained in the granulation.

Two discrepancies in these figures for sodium bicarbonate are apparent.

The *first* is due to a disregard of the probability of a conversion of part or all of the sodium bicarbonate which had not reacted with the acids during granulation, into normal carbonate, thereby entailing a loss of carbon dioxide and water greater than if this sodium bicarbonate had remained as such in the granulated salt.

The *second* is due to the possibility of the presence of normal carbonate in the bicarbonate originally used in the manufacture of the effervescent salt.

All calculations of bicarbonate from carbon dioxide will be too low if normal carbonate be present; and all calculations of bicarbonate from alkalinity of the ash will be too high if normal carbonate be present in the original materials.

For these reasons, the analytical results cannot be made to total 100 per cent., even though the errors of experiment are negligible, and all figures for sodium bicarbonate must be stated, not in terms of absolute percentage, but simply as the *equivalent* of sodium bicarbonate.

1. *Caffeine Method.* 10 Gm. of the effervescent salt are dissolved in 40 Cc. of water, the solution is made alkaline with 10 per cent. potassium hydroxide solution and shaken out with 3 portions of chloroform, 30 Cc. each. The chloroform solutions are poured through cotton into a beaker, concentrated on the water-bath, and filtered through a filter moistened with chloroform, into a tared flask, rinsing the beaker and filter with 3 small portions of chloroform. The chloroform solution is evaporated to dryness on the water-bath and dried at 60° C. in an air-bath to constant weight.

Notes.—With salts containing acetanilid or other substances soluble in chloroform, the per-iodide method of separating caffeine should be resorted to.

2. *Bromides Method.* Slowly carbonize 1 Gm. of the effervescent salt in a crucible, extract the resulting charred mass with hot water, filter, exactly neutralize the filtrate with acetic acid, and titrate against decinormal silver nitrate, using potassium chromate as indicator.

Notes.—In this way, of course, any chlorides present are estimated as bromides, but since chlorides are generally present only in very small quantities as impurities in bromides, they do not seriously interfere with the results of the analysis. But if it is found that chlorides are present in considerable amounts, it will be necessary to resort to the usual methods of their separation from bromides.

A direct titration with silver nitrate, without preliminary carbonization, does not give accurate results on account of the reducing action of tartrates on silver salts.

3. *Sugar Method.* 12 Gm. of the effervescent salt are dissolved in 100 Cc. of water, 5 Cc. of hydrochloric acid, sp. gr. 1.18, added, and the solution, contained in a flask, heated on the water-bath for 30 minutes. The solution containing the inverted sugar is cooled, diluted to 250 Cc., and titrated with Fehling's Solution as follows: 10 Cc. of standard Fehling's Solution (= 0.0475 Gm. cane-sugar) are placed in a beaker, diluted with 30 Cc. of water, heated to boiling, and titrated quickly with the above sugar solution, added from a burette. As indicator, use 1 per cent. potassium ferrocyanide solution acidulated with acetic acid, in small drops on a test-plate ("Tupfprobe.")

Notes.—The presence of tartaric acid prevents the ready use of the polariscope for the determination of sugar.

4. *Carbon Dioxide Method.* The quickest, most accurate, and most convenient method for the estimation of carbon dioxide in granular effervescent salts is attained, in our opinion, through the use of Dr. Scheibler's "Apparat zur procentischen Bestimmung der kohlensauern Kalkerde in der Knochenkohle."

For a description of the apparatus and the details of its use, see Muspratt's "Handbuch der technischen Chemie" vol. 4, p. 1366, or Sutton's "Volumetric Analysis," 1904, p. 104. In working with granular effervescent salts, we place 0.5 Gm. of the salt in a bottle which serves as a generator for carbon dioxide, and by means of a graduated pipette, exactly 8 Cc. of distilled water into the hard rubber cylinder. After making a tight connection with the apparatus, and adjusting the level of the water in the measuring tubes, the water in the rubber cylinder is carefully poured upon the effervescent salt by carefully inverting the generator bottle. The generator bottle should be vigorously shaken towards the end of the reaction.

When the generation of carbon dioxide has ceased, equalize the water levels in the measuring tubes, and take the reading of volume of CO_2 (which is measured at atmospheric pressure). At the same time, observe the temperature and the barometric pressure, and calculate the weight of CO_2 produced as follows.

CALCULATION.

I. To reduce the volume of CO_2 generated in the apparatus to its equivalent measured at 0°C. and at 760 mm. pressure, we employ the following formula:

$$W = \frac{v \times 0.00198\,(b - s)}{(1 + 0.0037\,t)\,760},$$

$W +$ weight of the CO_2 at 0°C. and 760 mm.,

$v =$ Cc. of CO_2 as measured in the apparatus,

$b =$ barometric pressure,

$s =$ tension of water-vapor at the temperature t.

II. A second correction must be made for the amount of CO_2 dissolved in the water used in dissolving the salt, and since this amount varies with the temperature and the barometric pressure, we employ two formulas to reduce the volume of the dissolved gas to that at 0°C. and 760 mm.

A. Formula for calculating volume of CO_2 dissolved in 1 volume of water, at a certain temperature:

$\alpha = 1.7967 - 0.07761\,t + 0.0016424\,t^2$,

$\alpha =$ volume of CO_2 at 0°C. and 760 mm. pressure,

$t =$ observed temperature.

(See Bunsen, Jahresbericht, 1855, p. 280. Tables giving the volume α up to 25°C. may be found in the Chemiker Kalender, but for temperatures above 25°, the formula calculation must be used.)

B. Correction for variation of barometric pressure: For each mm., add if the pressure is above 760, subtract if it is below, 0.00196 (β).

The total weight of absorbed CO_2 is then calculated as follows:

$$\Delta = (\alpha \pm \beta)\ 8 \times 0.00198.$$

The result Δ is added to W, and the sum is the total amount of generated CO_2 expressed in Gm.

Notes.—The importance to the manufacturer of a quick and accurate method of determining the carbon dioxide in effervescent salts will be apparent, as the results obtained, compared with the total theoretical amount computed from the working formulæ, afford a ready means of showing the extent to which effervescence, and consequently deterioration, of the salt took place during its manufacture. While this usual loss varies considerably with different formulæ, the loss for each particular formula should fall within certain rather circumscribed limits, and any loss greater than the usual indicates an excessive and unnecessary effervescence during the process of granulation, due to slowness in handling, over-heating, or other cause. Thus, an effective check on the efficiency of the manufacturing department, as well as a control of the quality of the product, may be secured by systematically testing each lot in this manner.

While the calculation is somewhat laborious, for practical purposes it is not always necessary to make exact corrections for dissolved CO_2 at the various temperatures and pressures, and for the calculation of W, the authors are engaged in preparing a table, whereby the result W, for 1 Cc. of gas as measured in the apparatus, may be read for any temperature and any pressure within the usual working limits.

In order to ascertain the accuracy of the results to be attained by means of Scheibler's apparatus, we made several analyses of pure crystalline calcium carbonate (Iceland feldspar). The following is a typical result:

0.2002 Gm. of the calcium carbonate generated 0.08793 Gm. of CO_2 (figure obtained after all necessary corrections were made), which equals 43.92 per cent. (The theory is 43.95 per cent.).

5. *Tartaric Acid.* Tartaric acid is determined by one of the two following methods, both of which have given us highly satisfactory results when tried on known mixtures. The results indicate total amount of tartaric acid (both free and combined) in the preparation.

METHOD I.

A modification of Goldemberg's method for the estimation of total tartrates in argols: 4 Gm. of the effervescent salt are dissolved in 20 Cc. of water containing 4 Gm. of potassium carbonate. 5 Cc. of glacial acetic acid are added, and the mixture is stirred for 5 minutes. 100 Cc. of U. S. P. alcohol is then added, and the mixture stirred for 5 minutes more. It is then allowed to stand for at least 18 hours, after which it is filtered with the aid of the suction-pump in such a way that the precipitate is transferred to the filter last. The beaker and precipitate are washed at first with three portions of 50 per cent. alcohol of 5 Cc. each, and afterwards with four portions of U. S. P. alcohol of 10 Cc. each. The precipitate is allowed to drain thoroughly after each washing, and is finally returned, together with the filter-paper, to the beaker. 150 Cc. of boiling water are then added, and the resulting solution is titrated while hot against normal potassium hydroxide solution, using phenolphthalein as indicator. 1 Cc. $\frac{N}{1}$ KOH=0.18678 Gm. of potassium bitartrate=0.14892 Gm. tartaric acid.

METHOD II.

A modification of the method used for the estimation of tartaric acid in wines: 4 Gm. of the effervescent salt are dissolved in 35 Cc. of water containing 15 Gm. of pure potassium chloride, and 2 Cc. of glacial acetic acid, 3 drops of 20 per cent. potassium acetate solution, and 30 Cc. of 95 per cent. alcohol are added. Mixture is stirred for at least 5 minutes, and is then allowed to stand for 15 hours. The crystalline precipitate is filtered off with the aid of the suction-pump, and washed at first with several portions (using 20 Cc. in all) of the following mixture:—potassium chloride 15 Gm., 95 per cent. alcohol 20 Cc., water 100 Cc. The precipitate is then washed with 3 portions of 95 per cent. alcohol of 10 Cc. each. The precipitate, together with the filter-paper, is then returned to the beaker, dissolved in hot water, and titrated against normal potassium hydroxide solution as in method 1.

6. *Citric Acid Method.* As stated in the outline in the introduction, the citric acid is estimated from the difference between the total acids expressed as the equivalent of normal potassium hydroxide solution, and the total amount of tartaric acid, expressed in the same manner, found by one of the preceding methods. The total acids are determined by two steps as follows:

A. Acids left in excess when the salt is dissolved in water: 5. Gm. of the effervescent salt are dissolved in 50 Cc. of water, heating to boiling until all CO_2 is driven off, and titrated against normal potassium hydroxide solution, using phenolphthalein as indicator. The result is expressed as the number of Cc. required for 1 Gm. of the effervescent salt.

B. Acids which have combined with bases when the salt is dissolved in water: 1 Gm. of the effervescent salt is dissolved in a platinum dish, in 10 Cc. of water, evaporated to dryness, and ignited. The ash is extracted with boiling water with the addition of 10 Cc. of normal sulphuric acid, and the mixture is filtered, washing the dish and filter with water until the filtrate and washing measure 250 Cc. An aliquot part is then taken and titrated back with normal potassium hydroxide solution, using phenolphthalein as indicator. The result is expressed as the amount of $\frac{N}{1}$ potassium hydroxide, which is equivalent to the sodium carbonate found in the ash of 1 Gm. of the salt.

The sum of results A and B gives the amount of total acids expressed in Cc. of normal potassium hydroxide solution, in 1 Gm. of the effervescent salt.

Citric acid is then calculated from the difference between the total acids and tartaric acid as follows: Number of Cc. of $\frac{N}{1}$KOH equivalent to total acids, free and combined, in 1 Gm. of effervescent salt, minus number of Cc. of $\frac{N}{1}$ KOH equivalent to tartaric acid, free and combined, in Gm. of effervescent salt, equals the equivalent of citric acid, free and combined, in 1 Gm. of effervescent salt.

(1 Cc. of $\frac{N}{1}$KOH=0.0695 Gm. crystalline citric acid, or 0.0635 Gm. of anhydrous citric acid.)

Notes.—Several attempts were made to determine the actual amount of free tartaric and citric acids present in the effervescent salt by extracting with absolute alcohol, and titrating the resulting solution, but quantitative results could not be obtained, undoubtedly on account of the solubility of sodium bitartrate in absolute alcohol.

That the formation of bitartrates does not interfere with the accuracy of the determination of total acids as given above, is due to the fact that any bitartrate formed when the effervescent salt is dissolved indicates, by the process of titration A., one half of the amount of tartaric acid represented by the bitartrate and at the same time indicates by the process B., one-half of the amount of tartaric acid represented by the bitartrate; so that, when the results of A. & B., expressed in terms of equivalent of normal potassium hydroxide solution, are added together, any tartaric acid which may have been present in the form of bitartrate becomes properly expressed as tartaric acid in terms of equivalent of normal potassium hydroxide solution.

7. *Sodium Bicarbonate.* Both the amount of CO_2 found, and the sodium carbonate found in the ash were calculated into sodium bicarbonate, the former figure representing the sodium bicarbonate left uncombined with acids during the process of granulation and the latter representing the amount of sodium bicarbonate taken for the manufacture of the salt, these figures being subject to the discrepancies, as pointed out in the introduction, arising from the fact that no account is taken of conversion of bicarbonate into carbonate during the process of granulation, nor of the possible presence of normal carbonate in the sodium bicarbonate used for the manufacture of the salt.

The following table shows the average results of the analysis of samples of four different commercial brands of granular effervescent caffeine hydrobromate purchased on the open market in the city of Philadelphia.

Samples.	No. 1.	No. 2.	No. 3.	No. 4.
Caffeine	0.86 p. c.	0.87 p. c.	0.338 p. c.	0.106 p. c.
Caffeine per dose	2.1 gr.	1.2 gr.	0.31 gr.	0.11 gr.
Sodium bromide	10.9 p. c.	4.9 p. c.	2.4 p. c.	None present.
Sugar	18.63 p. c.	14.12 p. c.	36.55 p. c.	42.09 p. c.
Carbon dioxide	15.16 p. c.	14.80 p. c.	11.39 p. c.	9.79 p. c.
Sodium bicarbonate from CO_2	28.93 p. c.	28.25 p. c.	26.57 p. c.	18.69 p. c.
Tartaric acid	26.61 p. c.	16.89 p. c.	15.35 p. c.	9.66 p. c.
Citric acid, anhydrous	9.95 p. c.	27.76 p. c.	15.63 p. c.	21.60 p. c.
Sum of percentages (X)	95.88 p. c.	92.79 p. c.	96.84 p. c.	92.15 p. c.
100 per cent. minus sum (X)	4.12 p. c.	7.21 p. c.	3.16 p. c.	7.85 p. c.
Sodium bicarbonate from alkalinity of ash	34.96 p. c.	51.98 p. c.	34.69 p. c.	34.44 p. c.
Citric acid, crystalline	10.88 p. c.	30.37 p. c.	17.10 p. c.	23.63 p. c.
Sum of percentages (Y)	102.84 p. c.	119.13 p. c.	106.43 p. c.	109.93 p. c.
Sum (Y) minus 100 per cent.	2.84 p. c.	19.13 p. c.	6.43 p. c.	9.93 p. c.

The difference between 100 per cent. and the sum total of the percentages (x) of the following substances, found or calculated :

Caffeine,
Sodium Bromide,
Sugar,
Sodium Bicarbonate, *calculated from carbon dioxide,*
Total Tartaric Acid, and
Total Citric Acid, *anhydrous,*

is explained (aside from experimental errors) by the sodium which has combined with the acids (at the expense of basic hydrogen which has been eliminated as water), and by the probable presence of normal sodium carbonate in the granulated salt in the place of sodium bicarbonate. Were it possible to determine accurately the amount of *free* tartaric and citric acids in the granulated salt, the portion of this difference between 100 per cent. and the sum total of determined and calculated percentages *due to combined sodium*, and the portion *due to the presence of normal carbonate* could be calculated.

The difference, on the other hand, between 100 per cent. and the sum total of the percentages (Y) of the following substance, found or calculated :

Caffeine,
Sodium Bromide,
Sugar,
Sodium Bicarbonate, *calculated from alkalinity of ash*,
Total Tartaric Acid, and
Total Citric acid, *crystalline*,

represents, approximately, the loss of carbon dioxide and water during the process of granulation.

Philadelphia, August, 1906.

Mr. Kebler stated that he had had some experience with these complex mixtures, and realized the difficulties to be encountered in dealing with them. Any light whatever that could be thrown on the subject he thought would be acceptable. He related an instance in his own experience while in commercial life, where he made a chemical compound which went out on the market, and complaint came back that it was not satisfactory, because it did not make a good preparation when used in a certain mixture. He asked for the composition of the mixture, and found there were about twenty-five different things composing it—such things as sodium phosphate, potassium bromide, acetanilid, sodium salicylate, etc. He was not surprised that his chemical compound did not give satisfaction.

Mr. Dunning asked Mr. Vanderkleed how he differentiated the citric acid from the tartaric acid in this complex combination of alkaline substances—in other words, how he would test for the presence of citric acid as distinguished from tartaric acid. Mr. Vanderkleed replied that the results were brought about by first working on known mixtures and getting the conditions perfect for the estimation of the tartaric acid ; then, as set out in the introduction, any excess of acidity over and above that which could be accounted for by the tartaric acid would be treated as citric acid. Of course, in the determination and identification of these substances every recognized test is employed, preferably the precipitates formed with calcium salts, calcium salts giving probably the best means of differenentiating between citric and tartaric acid.

Mr. Heuisler, of Baltimore, said he had personally seen two reports from chemists in regard to two different effervescent salts which he knew did not contain any tartaric acid, and yet both of them claimed tartaric acid was present. He said he had used Scheibler's method for determining carbon dioxide, and had found it very accurate. Unless correction is made for the amount absorbed in the liquid, good results will not follow. In regard to the determination of bromides, he favored Volhard's method; he had gotten results that he knew to be accurate.

Mr. Lyons said it had always been his practice in making tests to use a carbonate of known strength, and determine the correction to be made from the result of that test, which is very simple and requires but little time. Mr. Vanderkleed agreed that, in the absence of tables for making the correction, it would take much less work to do that than to make the the calculation.

Mr. Dunning, recurring to the question of tartaric and citric acid in these complex mixtures, said that in his experience he had found that these acids could not be detected by the customary methods, and that the only test by which he had been able to detect them was the method of Prescott and Johnson, in their work on Qualitative Analysis.

The paper was received and referred for publication.

Mr. Vanderkleed at request of the chair next read a paper on

METHOD FOR THE ASSAY OF OINTMENTS CONTAINING EXTRACTS OF BELLADONNA, STRAMONIUM OR HENBANE.

BY CHARLES E. VANDERKLEED.

It is very desirable to have an accurate assay process for ointments containing these potent drugs, since by a more or less rapid absorption, typical belladonna-poisoning may follow a careless or excessive use of the same.

The following method has given splendid results with ointments having a petrolatum base.

The difficulties were enhanced by the fact that the ointments contained also a considerable amount of tannic acid.

Weigh about 5 Gm. in a small beaker; stir with about 30 Cc. of ether; let stand for a few moments until the ether is fairly clear; then pour off the latter carefully into a separator and repeat the extraction of the residue with ether once more in the same way.

Reserve the residue in the beaker and shake out the ether in the separator once with about 30 Cc. of 5 per cent. sulphuric acid. Set aside the acid layer, marking it "Solution A," and reject the ether.

Dissolve the residue in the beaker as nearly completely as possible in 30 Cc. of 5 per cent. sulphuric acid and pour into a separator. (The residue, consisting largely of the extracts and the tannin, is quite well soluble in the acid, but the tannin precipitates the alkaloids. The whole mixture, therefore, precipitate and all, must be transferred to the separator.) Wash the remaining residue once more with 30 Cc. of 5 per cent. sulphuric acid, and transfer to separator. Finally wash the beaker with 30 Cc. of ether, and transfer to the same separator.

Shake out twice with ether and reject the ether washings. (A precipitate of alkaloidal tannate will remain suspended between the ether and water layers during these washings, and care must be taken in pouring out the ether washings that none of this precipitate be lost.)

Now add to the acid solution in the separator the acid solution first set aside and marked "Solution A." Make alkaline with stronger ammonia water. (The precipitate of alkaloidal tannates will be decomposed and dissolved.) Shake out with three portions of chloroform, evaporate the chloroform solutions, dissolve in 4 Cc. $\frac{N}{10}$ sulphuric acid with the aid of water and a few drops of chloroform, and titrate back with $\frac{N}{100}$ potassium hydroxide solution, using iodeosin indicator.

Philadelphia, August, 1906.

There was no discussion on this paper, and it was ordered to take the usual course.

Mr. Eldred presented the following paper on aloin in aloes:

THE ESTIMATION OF ALOIN IN ALOES.

BY FRANK R. ELDRED AND C. A. JENNINGS.

In examining aloes and passing upon its quality, we have often wished for a method by which some idea of its value could be formed.

The accurate determination of the aloin, even though practicable, would not definitely establish the value of the aloes, as other cathartic principles are no doubt present in aloes. However, the value of aloes is probably due largely to its aloin content.

Extraction of aloes with a mixture of chloroform and methyl alcohol, as suggested by Tschirch, for the valuation of aloes, has been shown to be of little value, as much inert material seems to be extracted by this menstruum.

It was thought that by the successive solution of the material extracted in different solvents a fairly pure aloin might be obtained. Water, iso-butyl, amyl, and propyl alcohols, acetone, acetic ether, a mixture of chloroform and methyl alcohol, and a mixture of iso-butyl alcohol and toluene were tried; but a material which was soluble in all these solvents evidently contained a large percentage of substances other than aloin.

One gram of finely powdered Barbadoes aloes was extracted in a Wiley's extractor, with a minimum boiling-point mixture of chloroform and methyl alcohol. The solution was filtered, evaporated to dryness, and the residue dissolved as far as possible in water. The aqueous solution was filtered and shaken out with several portions of petroleum-ether, which removes a small amount of an oily substance, and some aloin. The united petroleum-ether washings were then shaken out with 50 per cent. alcohol, which removes the aloin, but leaves the oily substance in the petroleum-ether solution. The alcoholic washings were evaporated to dryness, redissolved in water, and added to the aqueous solution containing most of the aloin. The aqueous solution was then extracted with acetic ether in a Bosman's extractor.

The acetic ether was evaporated, alcohol being added when a small volume remained. The alcohol forms a minimum boiling-point mixture with acetic ether, which can be removed by this means without decomposition which seems to occur when alcohol is not used. The residue was dried at 110° C. and weighed.

A sample of Barbadoes aloes, which yielded 20 per cent. of aloin by Shaefer's method (Pharm. Ztg., 1896, p. 65); when treated in the above manner yielded 45.6 per cent. of impure aloin.

Pure barbaloin treated in the manner described was recovered with practically no loss.

Precipitation as tri-brom-aloin by means of bromine water was next tried. One gram of the same aloes was treated in the manner described above, the residue dissolved in about 15 Cc. of water, and excess, about 15 Cc., of bromine water added. The precipitate of tri-brom-aloin was filtered off through an asbestos filter in a Gooch crucible, and the precipitate completely transferred to the filter by using the filtrate for washing. The filtrate was concentrated to 15 Cc., when a further precipitation occurred. The precipitate was filtered off in the same manner, and the precipitate and filter freed from liquid as much as possible by a filter-pump. The precipitate was then dried at 110° C., and weighed. From the amount of impure tri-brom-aloin (m. p., 184° C.) obtained, the amount of aloin was calculated to be 40.6 per cent.

A duplicate experiment gave a result of 39.8 per cent.

In treating pure barbaloin by this method we recovered about 90 per cent. in the form of tri-brom-aloin. Thus the loss in precipitating pure aloin as tri-brom-aloin, is about the same as the loss in precipitating the material obtained by extraction, and the precipitation as tri-brom-aloin seems therefore to be of little value applied in this manner.

We do not present this as a method of any accuracy, but think that it may be of some value in determining the quality of aloes.

In carrying out these simple experiments several points have suggested themselves to us, which we hope to investigate later.

There was no discussion, and the paper was received and referred.

The Chair called attention to the fact that he had that morning received by registered mail from Switzerland a paper by Prof. Edward Schaer, of the University of Strassburg, which was in German, but which had been been referred to the German scholar of the Section for translation, and he would call on Mr. Puckner for an abstract of the paper. Mr. Puckner read a short abstract, bringing out the chief points of the paper, a full text of which here follows:

THE BEHAVIOR OF ALKALOIDAL SALTS TOWARDS IMMISCIBLE SOLVENTS.

BY EDWARD SCHAER, M. D.

(*Translated from the German.*)

As is well known, some of the most important methods of isolating vegetable alkaloids, not only in the case of drug assays, but also in toxicologic investigations, depend upon the solubility of the free bases in ether, chloroform, benzene, etc., and the insolubility, or at least sparing solubility, of the salts of such bases in the same solvents. A number of exceptions to this rule have been recorded and special attention called in the chemico-toxicologic literature to cases where smaller or larger quantities of alkaloid have been found to pass from decidedly acid aqueous solutions (which latter cannot be considered otherwise than as solutions of alkaloidal salts), into chloroform or ether, when either the shaking-out method or the perforation method was employed. As examples of such exceptions may be mentioned the well-known behavior of caffeine, colchicine, narcotine, etc. Recent observations have revealed the fact that similar abnormal behavior may occur under certain conditions in the case of other bases, such as atropine, narceine, strychnine and veratrine. Considering the importance of the behavior of alkaloids and their salts towards different solvents in various fields, it appeared desirable to extend and verify the observations hitherto made, and scattered in books and journals, in order to establish more accurate conclusions as to cause and effect. At my suggestion, Mr. A. Simmer has undertaken a series of more searching experiments during the past two years in the pharmaceutical department of the University of Strassburg, with the view of shedding more light upon the points in question, and I desire briefly to report on the main results of his work. For details, and especially the data concerning quantitative determinations, reference must be made to the complete article shortly to be published at Strassburg as an inaugural dissertation.

Chloroform, as has been long known, is remarkable for its relatively high solvent power towards free alkaloids and certain alkaloidal salts, which latter property is also met with in ether, although to a lesser degree. Experience has shown that chloroform is capable of abstracting free alkaloid from all neutral solutions of alkaloidal salts when shaken with the latter; and even uncombined morphine despite the sparing solubility of that alkaloid in chloroform, has been taken up by the solvent from neutral solutions of morphine salts. In the case of neutral solutions of the salts of nicotine and atropine, the amount of free alkaloid abstracted has been found extremely small owing to the strongly basic character of these alkaloids. It is natural to assume that this abstraction of free alkaloid by chloroform from neutral solutions of alkaloidal salts is caused by partial dissociation of the salts in aqueous solution, and hence it is to be expected that such phenomena will be lessened by the presence of larger quantities of stronger acids besides alkaloids of strongly basic character.

As a matter of fact it has been observed that chloroform does not abstract free alkaloid from aqueous solutions of salts of the more basic alkaloids if these have been acidulated with hydrochloric, nitric or sulphuric acid; weak bases, however, such as caffeine, colchicine, and a few opium alkaloids, yield appreciable quantities of free alkaloid to chloroform when their acidulated solutions are treated in the same manner.

If alkaloids be brought into solution with excess of phosphoric, citric or tartaric acid, such acid solutions will give up free alkaloid to chloroform, even in the case of the strong vegetable bases, and in the case of weak bases quantitative amounts of free alkaloid are often abstracted. Furthermore, some alkaloidal salts (notably those of weak bases) are transferred as such to chloroform, especially the salts of hydrochloric and hydrobromic acids and also of nitric acid, which behavior is in accord with the fact that solutions of some alkaloids, when acidulated with hydrochloric acid, do not yield free alkaloid but alkaloidal salts to chloroform, whereas solutions of the same salts when acidulated with tartaric acid will yield free alkaloid. The method of extracting alkaloid-containing substances with alcohol and tartaric and even phosphoric acid, frequently employed in forensic investigations, can therefore not be considered as rational in every respect. The use of dilute sulphuric acid would in some cases at least be preferable, as neither free alkaloid nor alkaloidal salts are abstracted by chloroform or ether from the solutions thus obtained.

It has also been observed that the addition of hydrochloric acid to solutions of the hydrochlorides of certain alkaloids causes an increase in the transfer of the salt to chloroform. This happens, for instance, in the case of narcotine, whereas in the case of acid solutions of colchicine and caffeine hydrochlorides, a transfer of the salt has not been noted. It is possible also in the case of alkaloidal salicylates, for instance those of morphine and nicotine, to determine the abstraction of these salts by chloroform; some alkaloidal acetates appear to behave in the same manner as the salicylates, although in all such cases the question arises whether the chloroform does not abstract free alkaloid and free acetic or salicylic acid, after dissociation, which then reunite to form the respective salts.

Concerning the behavior of other alkaloidal salts, the fact should be mentioned that in the case of the sulphates, phosphates, tartrates and citrates of the strongly basic alkaloids, either no transfer from aqueous solutions to chloroform can be shown, or, if at all, only in very minute quantities. At the same time it follows from what has been said above regarding the behavior of neutral and acidulated solutions of alkaloidal salts, that in the case of forensic researches the use of sulphuric acid is to be recommended in place of tartaric or phosphoric acid for the extraction of matter with acidulated alcohol.

Other solvents differ somewhat from chloroform in their behavior towards neutral or acidulated solutions of alkaloidal salts, as follows: Ether is capable of abstracting free alkaloid from neutral solutions of alkaloidal salts, but in general alkaloidal salts are but slightly soluble in ether. Amyl alcohol and isobutyl alcohol will remove free alkaloid from neutral solutions of some alkaloidal salts, and the salts themselves in several cases from acid solutions. Carbon tetrachloride is remarkable for the fact that while it will remove free cocaine from its hydrochloric acid and tartaric acid solutions, all other free alkaloids are difficultly soluble in that solvent, and alkaloidal salts generally insoluble. Benzene will abstract small quantities of free alkaloid from neutral solutions of alkaloidal salts, as for instance in the case of codeine, strychnine and veratrine, and furthermore, alkaloidal salts are frequently not wholly insoluble in it, as in the case of strychnine salicylate.

From the foregoing observations the conclusion is reached that during the contact of water-immiscible solvents, such as chloroform, ether, etc., with neutral and especially acidulated solutions of alkaloidal salts, changes occur in consequence of which lesser or greater quantities of free alkaloid, as well as of alkaloidal salts, are removed by these solvents, and hence may escape detection in forensic cases. This transfer of alkaloid in a free or combined state is due partly to a spontaneous decomposition of the alkaloidal salts in aqueous solution and partly to the solubility of certain alkaloidal salts in chloroform, ether, etc. Frequently both phenomena occur simultaneously and may lead to serious complications in the search for and identification of vegetable bases. It is, therefore, desirable to pay due regard in all toxicologic investigations to the conditions above described.

Pharmaceutical Institute of the University of Strassburg, August, 1906.

Mr. Lyons remarked that the practical point suggested here was that in some of the assay work done there is occasion to extract the alkaloids from solutions containing alcohol, and it had always seemed to him important that that question be carefully investigated, the point being to guard against the presence of an undue amount of alcohol.

Mr. Kebler thought Prof. Schaer had brought out in a striking way the observations of many chemists in their work, and that it was well to emphasize these things, especially from a practical point of view. These separations are often said to be sharp, when as a matter of fact they are not; in fact, very seldom is a sharp separation possible.

The Chair said the paper would take the usual course.

Mr. England presented a paper on nux vomica, exhibiting a number of specimens of the powdered drug and of the tinctures made therefrom after filtration.

TINCTURE OF NUX VOMICA, U. S. P., 1900.

BY JOSEPH W. ENGLAND.

Under the title of Nux Vomica, or Vomic Nut, the seeds of Strychnos Nux vomica, W. I., 1052, were officially mentioned by the U. S. Pharmacopœia of 1820, but the tincture of nux vomica was not recognized until the issue of 1850, when a formula was given for its preparation from the rasped seeds by maceration with alcohol, in the cold, for fourteen days, expression and filtration; or, maceration for two days, transferrence to a percolator, and percolation with alcohol until the requisite quantity of clear liquid was obtained. The strength was eight ounces of the drug to two pints of alcohol.

In the U. S. P. of 1860, and of 1870, the seeds were directed to be used in a "fine powder," and this was digested with one-half of the quantity of alcohol, at a gentle heat, transferred to a percolator, and percolated with sufficient alcohol to make the required amount. The strength was eight troy ounces of the drug to two pints of alcohol.

In the U. S. P. of 1880 a more complicated formula was adopted. The seeds, in a No. 60 powder, were macerated, and then percolated with a menstruum of alcohol eight parts and water one part. The first 90 parts of percolate were reserved, and the remainder of the percolate evaporated to ten parts, and mixed with the reserved portion. Then the percentage of anhydrous extractive was determined in a small quantity of the mixed percolates, and the finished product adjusted, by the addition of menstruum, to represent 2 per cent. of the anhydrous extract.

In the U. S. P. of 1890 the tincture was directed to be made by dissolving 20 Gm. of an anhydrous extract of nux vomica containing 15 per cent. of alkaloids, in a sufficient quantity of a mixture of three volumes of alcohol and one volume of water to make 1000 Cc. Each 100 Cc. contained 0.3 Gm. of total alkaloids. It was assumed that the strychnine and brucine were present in the total alkaloids in equal proportions, which would indicate that each 100 Cc. of tincture represented 0.15 Gm. of strychnine. As a matter of fact, this assumption is in error, the percentage of strychnine in the total or mixed alkaloids averaging usually about one-third to one-half of the total alkaloids.

In the U. S. P. of 1900 (8th Revision) 20 Gm. of a standardized extract of nux vomica containing 5 per cent. of strychnine is directed to be dissolved in sufficient of a mixture of three volumes of alcohol and one volume of water to make 1000 Cc. Each 100 Cc. contains 0.1 Gm. of strychnine, which apparently is an average reduction in strength from the 1890 revision of about 20 per cent.

It is to be regretted that the present issue of the U. S. Pharmacopœia has continued practically the formula of the previous revision, although an attempt has been made to secure a more definite product by using an extract standardized to contain 5 per cent. of strychnine. This extract, which is in a powdered form, is expensive and tedious to make, readily solidifies (which is due to the sugar-of-milk present), and when mixed with the official menstruum, it does not form a clear solution, but deposits more or less insoluble material (apart from the sugar-of-milk), and on filtration yields a tincture that becomes turbid in time, and precipitates. The writer has examined quite a number of the powdered extracts of nux vomica made by the official process by leading manufacturers, and in every instance, there has been an odor suggestive of caramelization or overheating, and more or less insoluble matter has been left on using them to make the official tincture. Samples of the powdered extracts are here submitted, together with samples of the tinctures made from them, both before and after filtration. The differences in physical properties are very apparent.

It has been claimed that strychnine is the only principle of medicinal value in tincture of nux vomica. The writer is not prepared to accept this statement. If true, it means that a solution of strychnine in alcohol and water should yield all the therapeutic results of a tincture made from the drug, and yet we know that the tincture, for some reason or other, is preferred by many physicians in certain clinical conditions, particularly where the gastro-intestinal tract is involved. This may, possibly, be due to the presence of extractive matter which retards the solution of the strychnine, in part, or in whole, in the stomach, and enables it to exercise a local influence (by absorption) as it passes over the mucous surfaces of the intestinal tract. But, be this as it may, the tincture is undoubtedly preferred to the alkaloid, by many physicians, in certain clinical conditions, and there must be a clinical reason for it.

Hence, the writer would suggest that tincture of nux vomica be made, not from a standardized powdered extract, which yields a product of doubtful therapeutic value, but from an assayed powdered fat-free nux vomica (No. 20 powder), and then standardized to the strength of the official tincture. The official tinctures of opium and of chincona are both made from assayed drugs, and the only reason that tincture of nux vomica has not been is probably because it contains fat, which renders the exhaustion of the drug difficult. But, if the fat be removed with clean petroleum-benzin and the residue dried and assayed, it can be readily exhausted and made into a tincture. The benzin treatment removes a very small amount of the alkaloids from the drug, but this is of no practical importance, as the fat-free drug is afterwards assayed for content of strychnine.

The last four analyses of powdered Nux Vomica (not fat-free) we have made this year, ran, in strychnine-content as follows :

1.4, 1.27, 1.25, 1.1 per cent., or an average of 1.25 per cent.

A sample of the tincture made from the assayed fat-free drug, and standardized to contain 0.1 Gm. of strychnine in 100 Cc., is here submitted.

The Chair called for discussion upon the paper, and said it was the second paper the section had had within a year on this subject, one having been presented at the last meeting on the preparation of the tincture of nux vomica from the powdered drug.

Mr. Lyons said he only had one suggestion to make, and that was that the Pharmacopœia gives the fluidextract standard, and it seemed to him it would be an easy matter to make that so as to prepare a tincture which would be of standard strength, without question, and save the making of two assays.

Mr. Francis criticised the Pharmacopœial methods as to nux vomica, and said he had often wondered how they had been retained through the various revisions. In the first place it is difficult to extract the drug and make the extract of the proper strength and color, even if a vacuum apparatus is used in the process. As to sugar of milk, it makes no difference whether it is made by the pharmaceutical manufacturer or the pharmacist; it is not an absorbent, but merely a diluent, and not used in sufficiently large quantities to make the extract permanent. He had already gone on record, he said, as favoring the use of a standard extract, the advantages of which are so evident that they cannot be overlooked. The pharmacist saves himself a great deal of trouble by using a standard fluidextract which he can make in whatever quantity he desires, and when once standardized, if he preserves it with care, he has the means of making a large amount of tincture.

Mr. Remington, referring to the process just proposed, said it had been demonstrated that the fixed oil of nux vomica contains an appreciable quantity of strychnine and if the tincture is made by extracting the drug with benzin and the results thrown away, the full alkaloidal strength will not be obtained. He had a specimen of fixed oil containing the alkaloids, which Mr. Charles Bullock many years ago had presented him; he did not remember the exact quantity of alkaloid it contained, but he did know it was quite appreciable.

Mr. England said he remembered very well the experiments Mr. Remington referred to as having been made by Mr. Charles Bullock. They were published in the American Journal of Pharmacy, he said, and the oil obtained was obtained by a process of extracting the seed with steam heat. As to the benzin treatment, it makes no great difference if there is a loss, because the finished product is standardized, and it can readily be seen whether the benzin contains a small amount of strychnine.

The Chair said the paper would take the usual course.

Mr. Wetterstroem, of Cincinnati, presented the following paper on the

U. S. P. requirement for morphine in tincture of opium, first explaining that as a number of druggists in his section were under the impression that the Eighth Revision of the Pharmacopœia had a lower morphine requirement for tincture of opium, he had conducted a number of experiments to test this matter, the results of which he presented for what they were worth.

A COMPARISON OF THE SEVENTH AND EIGHTH U. S. P. REQUIREMENT FOR MORPHINE IN TINCTURE OF OPIUM.

BY THEO. D. WETTERSTROEM.

The lime water purification of morphine in the U. S. P. VIII method of assay removes impurity to the extent of 7.68 per cent. if calculation can be made upon the difference of the minimum requirements of the two Pharmacopœias, *i. e.*, 1.3 Gms. of crystallized morphine in the U. S. P. VII and 1.2 Gms. in the U. S. P. VIII to the 100 Cc. of tincture.

As it may be of some interest to know whether in practice this difference in minimum morphine strength is sufficient to cover the loss by purification with lime water, the following experiments were made upon 27 samples of tincture of opium that were taken up at random throughout the State and representing as great a variety in product, strength and manufacture as can be found in the open market:

			In 100 Cc. of Tincture.			
	Sp. Grav. 15.6° C.	Color of Morphine.	Gms. Morphine U. S. P. VII.	Gms. of Impurity.	Gms. Morphine U. S. P. VIII.	Per Cent. of Impurity.
1	0.956	light-yellow	0.8939	0.033	0.86	3.7 per cent.
2	0.954	light-yellow	1.40	0.0677	1.33	4.8 per cent.
3	0.97	light-yellow	0.796	0.029	0.767	3.7 per cent.
4	0.959	brown	1.147	0.029	1.117	2.6 per cent.
5	0.955	light-yellow	1.265	0.115	1.15	9.1 per cent.
6	0.97	light yellow	1.568	0.141	1.427	9.0 per cent.
7	0.948	light-brown	0.763	0.026	0.736	3.5 per cent.
8	0.954	light-yellow	1.082	0.0248	1.057	2.3 per cent.
9	0.952	light-yellow	1.161	0.033	1.128	2.8 per cent.
10	0.959	light-brown	1.277	0.076	1.20	6.0 per cent.
11	0.956	dark-brown	0.8064	0.036	0.77	4.5 per cent.
12	0.958	yellow	1.337	0.115	1.222	8.6 per cent.
13	0.958	yellow	1.3646	0.086	1.278	6.3 per cent.
14	0.957	light-brown	1.217	0.056	1.161	4.6 per cent.
15	0.952	dark-brown	0.67	0.022	0.648	3.3 per cent.
16	0.946	brown	1.00	0.0278	0.972	2.78 per cent.
17	0.958	yellow	1.263	0.116	1.147	9.2 per cent.
18	0.954	brown	1.22	0.0244	1.195	2.0 per cent.
19	0.962	yellow	1.327	0.145	1.183	11.0 per cent.
20	0.954	light-brown	1.201	0.139	1.062	11.6 per cent.
21	0.957	light-brown	1.406	0.07	1.336	5.0 per cent.
22	0.941	brown	1.169	0.035	1.134	3.0 per cent.
23	0.953	yellow	1.473	0.139	1.344	9.4 per cent.
24	0.964	yellow	1.276	0.029	1.247	2.3 per cent.
25	0.965	light-brown	1.19	0.014	1.176	1.2 per cent.
26	0.959	light-brown	1.449	0.101	1.348	7.0 per cent.
27	0.959	brown	1.249	0.042	1.207	3.4 per cent.

Highest percentage of loss by purification, lime water.......... 11.6 per cent.
Lowest percentage of loss by purification, lime water.......... 1.2 per cent.
Average percentage of loss by purification, lime water.......... 5.3 per cent.

Although the general average of loss of weight by purification with lime water is well within the limit of impurity calculated (7.68), yet the variation is so great that it would be necessary to place the lower requirement at 1.15 Gm. instead of 1.2 Gm. morphine to 100 Cc. tincture (U. S. P. VIII), to take in the per cent. of loss of all the above tinctures examined. Even a greater variation in impurity is noted when the opium has been exhausted with water instead of diluted alcohol as in the case of powdered opium and deodorized tincture of opium. A sample of deodorized tincture of opium yielded 1.6 Gm. of light-colored morphine (U. S. P. VII), and when purified lost 15.4 per cent., which indicated the tincture to contain 1.354 Gm. of purified morphine to 100 Cc.

Precipitation of morphine was effected at a temperature of 12° C., and this temperature maintained for eight or ten hours.

Although filtration with lime water was conducted as rapidly as possible, yet a scum of calcium carbonate always formed on the liquid and of course is erroneously counted as impurity. A blank experiment with 240 Cc. of this same lime water at same temperature, however, yielded no appreciable amount of calcium carbonate, but the blank filtration was much more rapid than the filtration of the morphine solution.

I would therefore place the minimum purified morphine strength at 1.15 Gm. to the 100 Cc. tincture (based on the minimum morphine strength, U. S. P. VII, 13 per cent.) as meeting any and all unfavorable conditions that may occur in determining the morphine strength of tincture of opium.

The Chair said the paper would be received, and that he supposed discussion upon it would properly come with the general discussion upon the alkaloidal assay processes of the Pharmacopœia, which would be taken up in a few minutes.

The Chair said there were four papers before the Section the authors of which were not present, and he did not think it would be discourteous, therefore, to read the papers by title and refer for publication. The first was a paper on the "Percentage of Alcohol Remaining in Fluidextracts," by Mr. Joseph Feil, of Cleveland; the second on "The Development and Structure of the Seed of Argemone Mexicana," by J. O. Schlotterbeck and C. R. Eckler; the third on "Oil of Santal," by Messrs. A. R. L. Dohme and Hermann Engelhardt, and the fourth a "Preliminary Paper on the Coloring Matter of Certain Grape Skins as an Indicator," by Mr. E. V. Howell, of Chapel Hill, N. C.

Mr. Remington said the subject of Mr. Feil's paper was exciting a great deal of interest over the country at the present time, in view of the requirements of the new pure food and drug law. He had had a number of letters from manufacturing pharmacists, asking how the percentage of alcohol in fluidextracts was to be determined. He had not seen Mr. Feil's paper, but he would like to have it read, in view of the situation existing.

The Chair said he realized the force of Mr. Remington's remarks, but that he had read the paper in question a number of times, and could not make it out clearly. He would endeavor to state the substance of it, however, if the Section desired. Mr. Remington thought the Chair could state the pith of it, anyway, and he thereupon presented the substance of the paper to the best of his understanding of it. The text of the paper here follows:

PERCENTAGE OF ALCOHOL REMAINING IN FLUIDEXTRACTS.

BY JOSEPH FEIL, PH. G., PHAR. D.

The percentage of alcohol remaining in fluidextracts has two important points of view for the pharmacist. First the legal side of the question: fluidextracts have frequently been examined chemically as to their alcohol-content and when the percentage of alcohol was a little smaller than the original menstruum such a result was usually construed as an "adulteration;" and secondly, the strength of the alcohol has an important bearing in mixing these preparations with other more or less alcoholic fluids, pharmacists usually assuming that the alcohol present is equal in quantity to that of the initial menstruum.

The percentage of alcohol in fluidextracts is reduced, theoretically at least, by the following considerations:

1. The water in the drug, ranging approximately from five to fifteen per cent.
2. Loss in moistening and packing the drugs by evaporation of alcohol from the menstruum.
3. If made by the text process of the Pharmacopœia the soft extract resulting from the evaporation directed will contain from one to probably five per cent. of water.
4. The volume occupied by the extractive, which will range from 7 to 18 per cent.

It can readily be seen that it is practically impossible to state in any particular case the percentage of alcohol which should remain; but, as will be seen from the following experiments, the quantity remaining can roughly be guessed.

The volume of extractive was determined by dissolving the extractive from 25 Cc. of the fluidextract in 100 Cc. of the original menstruum and noting the increase of volume; the other data were obtained in the usual manner.

	Cimicifuga.	Buchu.	Gentian.
Water in drug, per cent.	11.25	9.50	12.
Weight of extractive Gm.	13.4	14.6	31.5
Volume of extractive Cc.	7.0	7.2	17.8
Alcohol in fluidextract by wt. per cent.	74.53	61.65	31.00
Alcohol which should remain by theory per cent.	72.4	60.1	29.13

It will be seen that more alcohol remained in the finished fluidextracts than theory would indicate; I had one experiment where the percentage was about one per cent. less, but in general the above represents the usual results.

It would be of great value to gather data of minimum and maximum amount of alcohol found in fluidextracts. These of course should come from many investigators and cover at least five years and likewise the various seasons of the year.

Conclusions. The percentage of alcohol remaining in fluidextracts is approximately the theoretical quantity and should not vary more than two per cent. from this standard.

The quantity found in any given fluidextract should have added to it the volume of water in the drugs averaged from many experiments, plus the volume of extractive calculated as about 50 to 60 Cc. to 100 Gm. and considered as original menstruum, and an error-allowance of not more than two per cent., plus or minus, should give the initial menstruum.

Cleveland, O., August 4, 1906.

Mr. Remington said he thought a number of the gentlemen present must have had a great deal of experience in this matter, and he thought a short discussion upon the proposition of how to meet this question would be of interest and value to a great many people throughout the country.

Mr. Francis was the chief speaker, and led off in the discussion. He said he believed he had had to deal with more fluidextracts during the time of the agitation of the pure food and drug law than the majority of the gentlemen in the house. As soon as this law was passed, it at once became evident that it would be necessary to put on the lables of bottles the exact percentage of official alcohol contained—or at least the approximate percentage. Some three or four years ago, he said, he was full of enthusiasm, and thought it would be possible to work out a mathematical rule whereby the theoretical percentage of alcohol contained in a fluidextract could be determined; he had thought that where he had sufficient data, he could say on the facts that the percentage of alcohol was so-and-so. He began and accumulated data for two or three years, and during that time he had as many as twenty fluidextracts of the same kind. But to sum the matter up in a nutshell, he found there was neither rhyme nor reason in the attempt to formulate such a rule for determining the alcoholic strength of extracts, and he did not believe any rule could be devised that would work out; there is no way by which one can determine by theory or calculation the amount of alcohol present in the finished fluidextract. Taking different lots of drugs of the same kind and subjecting them to the same process, the results will fairly agree, but there is liable still to be a variation of anywhere from five to fifteen per cent. in the amount of alcohol present, and the average extract cannot be used and meet the strict letter of the law; and yet the only practical way to meet the law is to take the fair average amount of alcohol in the fluidextract, based on sufficient data to determine it, and then state that on the label. There should be a leeway of at least two per cent. either way; and he suggested the scheme he now has in use in his laboratory, of arranging the alcoholic strength in multiples of five—50, 60, 70 and so on, up to 100 per cent. Then, if the strength of the fluidextract is shown to be 90, 91 or 92, it will be labeled *about* 90 per cent.; if it assays 93, 94, 95, 96 or 97, it would be labeled *about* 95 per cent.—a variation of two per cent. above and below this multiple of five. He repeated that there was no way of theoretically determining the percentage of alcohol in fluidextracts.

Mr. Lyons said the experience just given by Mr. Francis had been duplicated in his own experience. It is certainly impossible to say definitely, within three or five, and sometimes ten per cent., the amount of alcohol present in the fluidextract. The question now is, whether the government will be satisfied with a statement on the label as to the average per cent. of alcohol in the tincture.

Mr. Remington inquired if there was not some process based on distillation that could be used—the actual distillation of a sample of the drug, to ascertain in that way the amount of alcohol in the fluidextract. Mr. Francis replied that this was one of the alternatives that presented themselves; but if the government required the absolute percentage of alcohol present, then the manufacturer, whether he made a pint or a thousand times as much, must assay all that goes through.

Mr. Vanderkleed spoke of the many difficulties to be encountered in dealing with fluidextracts, in determining the alcoholic strength with any degree of certainty. For instance, take extracts containing glycerin, which will increase the gravity of the distillate. And the same as to the volatile oils, which, in many cases, it would be necessary to saponify before the alcohol could be distilled. On the other hand, a simple statement as to the menstruum used would be going to the other extreme. Some reasonable point between the two extremes would be the only practical solution of the difficulty.

Mr. England thought it manifestly unfair for the manufacturer to be compelled to give the exact alcoholic content of every fluidextract he makes, because he would have to assay every lot; then, as he frequently keeps it in storage for two or three months, while it might start out with the right percentage of alcohol, this is liable to decrease during the time of storage and would cause more trouble. He agreed with the suggestions made by Mr. Francis in the main.

Mr. Remington said he doubted if the government would accept the qualifying word "about," as the law states explicitly that there shall be stated on the label the amount of alcohol in the bottle, and does not take into consideration anything about evaporation or other causes of variance from the exact percentage as stated. He suggested that there was to be a meeting in New York next week to consider this important question, and this was the reason he had brought it up here, so as to get all the light on it possible.

The Chair called attention to the fact that, while no official notice had been received of the fact, the Section on Practical Pharmacy and Dispensing, at its session on Thursday night, had passed a resolution to the effect that the question of making tincture of opium by the Pharmacopœial method be referred to a committee of the Scientific Section, for experimentation and report at the next annual meeting. He expressed doubt, however, as to whether the committee provided for should be appointed before receiving official notice from the section named of the action taken there.

Mr. Puckner stated that it was suggested some years ago that the Sections on Practical Pharmacy and Dispensing and the Scientific Section might well co-operate, and that the Section on Scientific Papers might take up for consideration papers involving questions which the Practical Pharmacy Section could not answer; and he said he felt sure that the object of the motion referred-to was, that the new Chairman of the Scientific Section should secure a paper for the next annual meeting on this subject of tincture of opium.

And so the matter was passed.

Chairman Caspari here called attention to the fact that it had been agreed at the first session to devote an hour at this session to a discussion of the assay processes of the Pharmacopœia, and said the time had now come for taking up that matter.

Mr. Lyons, Chairman of the Committee on U. S. Pharmacopœia, stated that it had been customary, during the short time that committee had been in existence, to have the report of the committee read before, and discussed by, the Section on Scientific Papers, and he was sure this custom was expected to be followed at this time, as the discussion would center about the report.

The Chair said there was no question but that the discussion would center about some of the items of the report, and suggested that it might be better to discuss the report before this Section anyhow, as the Saturday morning general session would have a great deal of business to transact.

Mr. Wilbert said the report of the Committee on Revision of U. S. P. was generally presented at the second general session, but that the Association was so far behind with its business this year that the various committees had not been able to make their reports. He moved, therefore, that that part of the report referring to the alkaloidal assay methods of the Pharmacopœia be discussed now by this Section, and the report as a whole referred to the general session.

The motion was so put and carried.

Mr. Lyons then read from the following report that part covered by the motion:

REPORT OF COMMITTEE ON U. S. PHARMACOPŒIA.

Very little systematic work has been done by your Committee during the past year. Through the energy, however, of one member of the Committee, J. Fullerton Cook, the chairman has been provided with the material for a report which will be found not without interest and value. A series of questions relating to the fluidextracts and tinctures of the Pharmacopœia was drawn up and copies of these were sent to about sixty representative members of the American Pharmaceutical Association, including particularly men associated with the various manufacturing houses. Replies have been received from about twenty-five in all. The following is a summary of these replies:

Question 1. Have you found the following U. S. P. (8th Revision) alkaloidal standards for fluidextracts satisfactory and readily maintained?

Aconite.	0.4 Gm. aconitine in 100 Cc.
Belladonna root.	0.5 Gm. mydriatic alkaloids in 100 Cc.
Cinchona.	4.0 Gm. anhydrous ether-soluble alkaloids in 100 Cc.
Coca.	0.5 Gm. ether-soluble alkaloids in 100 Cc.
Colchicum seed.	0.5 Gm. colchicine in 100 Cc.
Conium.	0.45 Gm. coniine in 100 Cc.
Guarana.	3.5 Gm. alkaloids in 100 Cc.
Hydrastis.	2.0 Gm. hydrastine in 100 Cc.
Hyoscyamus.	0.075 Gm. mydriatic alkaloids in 100 Cc.
Ipecac.	1.75 Gm. alkaloids in 100 Cc.
Nux vomica.	1.0 Gm. strychnine in 100 Cc.
Pilocarpus.	0.4 Gm. alkaloids in 100 Cc.
Stramonium.	0.35 Gm. mydriatic alkaloids in 100 Cc.

TABULATED REPLIES.

	Yes.	No.	Doubtful.	Not tried.
Aconite	9	1	2	0
Belladonna root	4	5	3	0
Cinchona	9	1	2	0
Coca	8	1	2	1
Colchicum seed	6	3	1	2
Conium	5	2	1	4
Guarana	8	0	1	3
Hydrastis	9	1	2	0
Hyoscyamus	8	0	3	1
Ipecac	7	1	3	1
Nux vomica	11	0	1	0
Pilocarpus	4	3	2	3
Stramonium	6	3	2	1

To the first question, relating to the alkaloidal standards for fluidextracts, twelve replies were received, more or less detailed. From these it may be gathered that the standards that have been adopted are in the main reasonable. The replies that have greatest weight are those coming from manufacturing houses. From these it appears that to those who are able to procure drugs in fresh condition, the pharmacopœial standards of strength are two exacting only in the case of a few drugs. Difficulty is sometimes experienced in procuring belladonna root, colchicum seed and stramonium that meet the pharmacopœial requirements. There seems to have been difficulty of late locally in procuring hydrastis of full strength.

The consensus of opinion is clearly that, given drugs of standard strength, there is no difficulty in preparing from them by official processes fluidextracts that will meet pharmacopœial requirements.

REMARKS IN REPLY TO QUERY 1.

E. G. Eberle: Crude drugs of standard strength are often hard to obtain. I have found this so especially with hydrastis, aconite, belladonna, coca, pilocarpus and ipecac. A common source of error with the average druggist is in his failure to verify the strength of his volumetric solutions, which cannot be trusted to maintain their "titre" if kept for any length of time under ordinary conditions. [This observation is an important one. The weaker volumetric solutions ought not to be kept on hand. A "normal" acid solution (sulphuric acid) will keep for years with no appreciable change. From this the decinormal solution can be easily made by dilution with *neutral* distilled water when it is needed. When assays are not frequently made, the potassium hydroxide solutions are best made when wanted for use, standardized on the normal acid solution. The distilled water should be "recently boiled," and its neutrality demonstrated. When kept long in glass it is apt to be alkaline. A routine of titration for alkaloids ought to prescribed which would insure correct results provided only the acid solution is of correct strength, and[the alkali free from carbonate or silicate. A. B. L.]

Query 1. J. W. England: "Starting with fluidextracts of good drugs, the alkaloidal content can be determined without serious difficulty [by the official assay processes] except sometimes in the fluidextracts of the mydriatic drugs, where the content of alkaloid is relatively quite small and the percentage of non-alkaloidal extractive is quite high. Further, the mydriatic alkaloids are easily decomposed by chemical reagents." [If the official assay processes are carried through rapidly, there is no danger of loss of alkaloid from decomposition by reagents used. A. B. L.]

REMARKS ON SPECIFIC ASSAYS.

Aconite Root. E. G. Eberle: "in the evaporation of the fluidextract, I would suggest the addition of an insoluble substance, *e. g.*, pumice, kaolin or talcum, to facilitate the drying process. . . Assay of fluidextracts of aconite root from three different manufacturers, made prior to the eighth revision showed the presence of somewhat more aconitine than the present assay requires." A. R. L. Dohme: "fluidextract from good drug usually runs higher." E. L. Patch Co.: "three lots gave resp. 0.4, 0.884 and 0.448 Gm. aconitine in 100 Cc." H. L. Meredith: "have found it impracticable to maintain so high a standard. 0.35 suggested instead of 0.4. A. B. Lyons: "the root should be used as soon as possible after it is gathered. It will then produce a fluidextract considerably above the official standard in strength. The result of the assay should always be confirmed by Dr. Squibb's test. A solution 1 : 650 ought to produce the characteristic tingling of the lips and tongue, under the conditions of that test. Average observed strength of fluidextract (12 gallons from 100 lbs. of drug), the past year 0.53 Gm. to 100 Cc.; only one lot below 0.4."

Belladonna Root. E. G. Eberle: "crude drug of standard strength hard to find." Eli Lilly & Co.: "standard should be reduced to 0.45 Gm. in 100 Cc." A. R. L. Dohme: "standard readily maintained." E. L. Patch Co.: "ten lots of fluidextract made by U. S. P. 1900 gave resp. 0.453 and 0.510 Gm. in 100 Cc." H. L. Meredith: "have found it impracticable to maintain the official standard. This should be not higher than 0.43 Gm. in 100 Cc." E. H. Gane finds the standard not too high. L. E. Sayre and Chas. E. Vanderkleed report the same. C. E. Caspari: "seldom obtain more than 0.4 Gm. in 100 Cc." W. A. Puckner: "five lots assayed resp. 0.38, 0.44, 0.40, 0.46 and 0.48 Gm. in 100 Cc" A. B. Lyons: "while the root varies in strength much less than the leaves, it often falls below the pharmacopœial requirement. Four out of seven lots of fluidextract ran over required strength; three contained resp. 0.42, 0.44 and 0.48 Gm. in 100 Cc.

Cinchona. L. E. Sayre: "have not had good success with this fluidextract, but am not able to suggest any improvement." C. E. Caspari answers in the negative, without comment. C. E. Vanderkleed: "satisfactory, but the bark must be carefully assayed, as lots on the market vary from 3 to 9 per cent. total alkaloid." A. B. Lyons: "the drug is hard to exhaust, but if of official strength, will yield a satisfactory fluidextract. In practice at least ten per cent. of the alkaloid remains in the bark unless great care is taken in powdering the drug."

Coca. E. G. Eberle: "I have found it difficult to procure crude drug of standard strength." Eli Lilly & Co., "standard too high; should be 0.45 Gm. in 100 Cc." E. L. Patch Co.: "one lot of fluidextract assayed; yield, 0.62 Gm. in 100 Cc." All others report favorably on the official standard. The drug must of course be used as soon as possible after it is gathered, but if kept in a dry, cool place does not deteriorate very rapidly. A. B. Lyons: "average of seven lots of fluidextract (12 gallons from 100 lbs.) 0.48 Gm. in 100 Cc.; highest 0.65, lowest 0.38 (from old leaves)."

Colchicum seed. E. H. Gane: "standard rather high; a good deal of seed does not run as high as 0.5 per cent. colchicine." W. A. Puckner answers in negative, without comment. Eli Lilly & Co., A. R. L. Dohme, C. E. Caspari, L. E. Sayre and C. E. Vanderkleed answer in the affirmative distinctly (others only by implication in some such general statement as that the standards are satisfactory). A. B. Lyons: "the U. S. P. assay process may easily be improved upon; it is liable to yield results higher than they should be. It will probably be found that the standard of 0.5 Gm. in 100 Cc. is a little too high if the alkaloid is quite pure. By the official assay, the fluidextract generally will show 0.48 to 0.55 Gm. alkaloid in 100 Cc. For rapid work, I find titration with Mayer's reagent in a strongly acid solution quite satisfactory, the results checking well with gravimetric determinations."

Conium. No one has anything to say. In truth the drug deteriorates so rapidly that only the large manufacturers have opportunity to procure a prime article. The fluidextract is very little used, and hardly deserves a place in the Pharmacopœia.

Guarana. No comments are made on this fluidextract, except the following by C. E. Vanderkleed, which seems to cover the ground: "easy to obtain drug assaying above standard, but somewhat difficult to exhaust." E. L. Patch Co.: "one lot of fluidextract assayed; yield 4.92 Gm. in 100 Cc."

Hydrastis. E. G. Eberle: "difficult to obtain crude drug of standard strength." Eli Lilly & Co.: "standard too low; should be 2.5 Gm. in 100 Cc." H. L. Meredith: "best sample I have procured contained 1.70 Gm. in 100 Cc." A. B. Lyons: "the drug seldom contains, in my experience, less than 2.5 per cent. of hydrastine, but in view of reports from others it may be that a standard of 2.00 Gm. in 100 Cc. is not too low. The assay process does not give a pure hydrastine as is shown by the yellow color of the alkaloid extracted. 100 pounds of drug will generally make 14 to 16 gallons instead of 12 of fluidextract of pharmacopœial standard." E. L. Patch Co. reports assays of two lots of the fluidextract containing respectively 2.7 and 2.96 Gm. in 100 C.

Hyoscyamus. C. E. Caspari: "I usually obtain results a little lower than the official requirement." E. L. Patch Co. report one assay only, with yield of 0.0757 Gm. in 100 Cc. A. R. L. Dohme: "result of assay usually higher than requirement." A. B. Lyons: "drug very variable. Result of assays range from 0.05 to 0.085; rarely higher. Standard should not be above 0.07 Gm. in 100 Cc. In making the fluidextract it is necessary to keep the reserve portion of percolate as low as 750 Cc."

Ipecac. E. G. Eberle: "drug is often below pharmacopœial strength." Eli Lilly & Co.: "standard too low; should be 2.0 Gm. in 100 Cc." E. L. Patch Co.: "result of assays of two lots of fluidextracts respectively 2.2 and 2.28 Gm. in 100 Cc., but these were made from exceptional drugs. Three lots of drugs just in and assayed gave only 1.46, 2.0 and 2.2 per cent. From the first it would be impossible by the pharmacopœial process to make a standard fluidextract." E. H. Gane: "standard rather high on account of difficulty in exhausting the drug. A good deal of ipecac comes-in which does not run over 1.8 per cent. alkaloid." All others agree that the official standard of 1.75 Gm. in 100 Cc. is readily maintained. A. B. Lyons: "this is another case where the strength of the fluidextract (after removing the alcohol by evaporation) can be most quickly determined by titration with Mayer's reagent. Inasmuch as the drug contains two or more alkaloids, this method can not be said to be less 'scientific' than that by alkalimetric titration."

Nux Vomica. All give an affirmative reply. A. B. Lyons calls attention to the fact that the standard is very low in comparison with that of the drug, but approves it nevertheless, considering the difficulty in completely exhausting the drug. The standard is higher than that which had been generally adopted by manufacturers before the eighth revision of the U. S. Pharmacopœia.

Pilocarpus. E. G. Eberle and C. E. Caspari speak of the difficulty of procuring drug of pharmacopœial strength. This difficulty would disappear if this and other alkaloidal drugs were sold only on guaranteed assay. Eli Lilly & Co.: "standard too low for P. microphyllus; it should be 0.75 Gm. in 100 Cc." E. H. Gane: "standard high; 0.3 Gm. in 100 Cc. would be better." W. A. Puckner: "four lots assayed respectively 0.92, 1.31, 1.24 and 0.93 Gm. in 100 Cc." It is evident that there is pilocarpus and pilocarpus.

Stramonium. W. A. Puckner: "sixteen samples assayed respectively 0.25, 0.31, 0.17, 0.13, 0.25, 0.16, 0.18, 0.30, 0.17, 0.27, 0.23, 0.25, 0.45, 0.27, 0.24, 0.19." A. B. Lyons: "the drug is liable to vary greatly. The standard should not be as high as that of belladonna leaf, 0.3 Gm. in 100 Cc. is high enough, and in my experience rather above than below the average realized in practice."

Question 2. Can you suggest any improvement in the assay processes of the U. S. P. for fluidextracts?

C. E. Caspari: "Not at present."

A. R. L. Dohme: "None at present."

J. W. England: "Some minor changes in detail might be suggested, but nothing important."

E. H. Gane: "Too early to make definite suggestions."

Lyman F. Kebler: "These methods are at present under investigation in the Drug Laboratory in Washington."

Eli Lilly & Co.: "Some that we hope to include in a general paper on the subject at some future time."

A. B. Lyons: "Many details need to be modified. The most important change I now call to mind is in the assay of preparations of cinchona for "ether-soluble" alkaloids. The alkaloids are set free by adding an excess of ammonia water in presence of a definite volume of ether. The fluids are to be "shaken together at intervals during ten minutes." The directions should be to reduce the temperature of the fluids to 15° C. and shake continuously together during ten minutes. The object of the prolonged shaking is to cause the crystallization of the cinchonine, a considerable proportion of which is at first taken into solution in the ether. It is true that a portion of the cinchonidine and of the quinidine will also crystallize out, but experiment has demonstrated that if the above conditions are fulfilled, the result will be for practical purposes correct; *i. e.*, it will give a close approximation to the total "ether-soluble" alkaloids present, viz., the quinine, quinidine and cinchonidine. In barks containing a very large excess of cinchonidine (red barks) the result is likely to be a little low; if the method at present prescribed is followed, unless the temperature happens to be very low, the result is certain to be high. A definite temperature should be prescribed, not merely, as now, a temperature limit, and the cooling should precede the shaking, the low temperature being maintained during that process.

The unfortunate adoption of hematoxylin as an indicator should be declared a mistake, and cochineal should be substituted in all cases when that indicator is prescribed

In the opium assay the following changes ought to be made. 1. The crude morphine should be collected and weighed on a pair of counterpoised filters, instead of being detached from the filter for weighing. Anyone who will take the trouble to collect the morphine on such a pair of filters, and then detach the morphine will find that there remains on the filter anywhere from 10 to 30 Mgm. of substance, a portion of which is soluble in lime water. 2. The quantity of ether used in washing out residual narcotine ought to be at least doubled. 3. The crude morphine should be washed simply with morphinated water. The present complicated routine of washing is pretty in theory, but liable in inexperienced hands to vitiate results. With morphinated water no serious error can result from want of care or of experience.

In all assays by shaking-out processes, sufficient of the solvent should be prescribed to extract the whole of the alkaloid, and the assay process should provide tests to demonstrate that this has been done in each case—or better, the general instructions should make this imperative, without specific instructions in each instance.

Meyer Brothers: "Certain improvements in the assay processes are desirable, but we are not prepared as yet to make any suggestions."

W. A. Puckner: "In the valuation of fluidextracts the use of the 'aliquot part' is uncalled for. The sand method prescribed in case of fluidextract of pilocarpus is antiquated; a method similar to that for fluidextract of belladonna gives good results and is more expeditious."

L. E. Sayre: "Not prepared to answer now."

Charles E. Vanderkleed: "I could not possibly answer this question in a short space, but there is one point in which I think that all the U. S. P. assay processes are weak, viz.: in specifying certain small amounts of ethereal solvents for 'shaking-out' purposes. I do not believe that in half the cases the full amount of alkaloid can be extracted unless vastly more than the amounts of ether, chloroform, etc., specified be used."

Question 3. Is the acetic acid menstruum directed in the U. S. P. (8th rev.) for the fluidextracts of lobelia, sanguinaria and squill proving acceptable to the manufacturers and the trade?

Answers. A. R. L. Dohme (representing Sharp & Dohme): "No, to neither; sales have been nil."

E. G. Eberle: "Have heard no complaints." [It is to be observed that the question ignores the prescriber. However, for an article that is prescribed by physicians there must come to be a demand "in the trade."]

J. W. England; "Houghton has clearly shown that the acetic fluidextract of squill is very much inferior, pharmacologically, to the alcoholic fluidextract, and the same thing holds true, I believe, with acetic fluidextract of sanguinaria, and probably with acetic fluidextract of lobelia. Houghton has promised to investigate the matter experimentally and I hope we may have his results in the near future."

E. H. Gane: "Yes, as far as squill is concerned. We have considerable doubt as to the keeping qualities of the preparations of lobelia and sanguinaria."

Eli Lilly & Co.: "In our experience the acetic acid menstruum has not proved satisfactory, and demand for the preparations remains very small."

A. B. Lyons: "Manufacturers object to the use of acetic acid as a menstruum because it requires the substitution of glass or porcelain for copper in the percolators employed. Evaporation of the weak percolate with active acid menstruum is an unpleasant operation requiring also expensive porcelain evaporating-pans, and resulting in any case in a highly acid residual extract to be dissolved in the reserved percolate. This part of the official processes should be eliminated as it is indeed in the case of fluidextract of squill. The products are so different from the old fluidextracts of the same drugs that there is sure to be endless trouble about refilling prescriptions. Physicians are sure to raise a rough house if the druggist fills their prescriptions with the new fluidextract instead of the kind they have always had, " or else they will complain of the druggist who does not use the sour preparation their prescription calls for. The druggist will be kept guessing all the time unless he is a mind-reader. It is not strange that orders are not coming in for the acetic fluidextracts. They ought never to have been admitted as fluidextracts in any case."

H. L. Meredith: "Prefer the old fluidextract sanguinaria!"

Meyer Brothers: "Thus far we have used acetic acid only on fluidextract of sanguinaria, and have found it perfectly satisfactory with no complaints from the trade."

E. L. Patch Company: "We do not think the acetic acid menstruum is satisfactory. The products precipitate much worse than the hydro-alcoholic and the taste is more disagreeable."

L. F. Sayre: "We have done some work on the squill, and may be able to suggest something later."

C. E. Vanderkleed: "I think not. The U. S. P. 1890 fluidextracts continue to be, generally used. There is very little specification of '8th Revision.' I consider the U. S. P. 8th Revision fluidextracts inferior to the old."

M. I. Wilbert: "Not popular."

Question 4. Is the process for fluidextract of glycyrrhiza in the U. S. P. (8th Revision), satisfactory, and is the product free from acridity?"

Answers. A. R. L. Dohme: "If not heated too high product is free from acridity. If heated too high there may be acridity. Works well."

J. W. England: "No; precipitates on standing."

E. H. Gane: "The process is tedious, wasteful of alcohol, and unsatisfactory, and does not yield a product free from acridity. The fluidextract is dark and not popular with the trade."

Eli Lilly & Co.: "Too strong in ammonia after standing some time."

A. B. Lyons: "Results have proved disappointing. In my experience an acrid glycyrrhiza will produce an acrid preparation, whatever process is used."

H. L. Meredith: "The process is moderately satisfactory, but the product is not free from acridity. The addition of 0.01 per cent. of ammonium carbonate to the boiling water during the process of percolation gives me a more satisfactory product."

Meyer Brothers: "The product is entirely satisfactory and free from acridity."

L. E. Sayre: "Satisfactory."

C. E. Vanderkleed: "The process is satisfactory, but the fluidextract deposits heavily on standing. It makes a very good syrup of glycyrrhiza."

Question 5. Is the new menstruum for fluidextract of buchu (alcohol 3 parts, water 1 part) as satisfactory as 94 per cent. alcohol used in the U. S. P. 1890?

Answers. A. R. L. Dohme: "Fully as satisfactory."

E. G. Eberle: "I think not."

J. W. England: "No."

E. H. Gane: "No; the 94 per cent. menstruum gave better results."

Eli Lilly & Co.: "The new menstruum will exhaust the drug, but does not yield the bright green product demanded by pharmacists."

A. B. Lyons: "I think the present menstruum preferable. From the standpoint of the physician, alcohol is objectionable in many cases where buchu is indicated. The weaker menstruum undoubtedly extracts all the active principles of the drug, and holds them well in solution. No complaint is made about the color of the new product, which indeed is not new except as an official preparation."

M. Lester MacFadden: "No, neither pharmaceutically nor therapeutically."

H. L. Meredith: "I have never prepared the fluidextract by the 1900 formula, because I feared the incomplete extraction."

Meyer Brothers: "The new menstruum is just as satisfactory as the old."

Wm. Mittelbach: "I think the old the best."

E. L. Patch Company: "We believe the new menstruum is more satisfactory than that of the 1890 Pharmacopœia."

C. E. Vanderkleed: "I do not believe the drug is as well exhausted by the new menstruum. The appearance of the product is inferior to that of the old."

[This set of answers is particularly interesting and edifying.]

Question 6. Have you found the U. S. P. (8th Rev.) process for fluidextract of wild cherry to completely extract the virtues of the drug, with the amount of menstruum prescribed, and without the necessity of evaporating a weak percolate?

Answers. A. R. L. Dohme: "Yes."

E. G. Eberle: "Only made one lot, in which we did not find it necessary to continue the percolation."

J. W. England: "No."

E. H. Gane: "Yes, the weak percolate simply adds to the extractive and tannin content."

Eli Lilly & Co.: "We have no data, but cannot see how drug can be exhausted by the time the 1000 Cc. are obtained.

A. B. Lyons: "The drug is possibly for practical purposes sufficiently exhausted, but the product in other respects is unsatisfactory, precipitating badly"

W. Lester MacFadden: "Yes, reasonably, but I doubt if pharmacists generally secure uniform results." !

H. L. Meredith: "I have never prepared this preparation for the reason that I feared the incomplete extraction."

Meyer Brothers: "We have found that the official process does not completely extract the virtues of the drug and would recommend repercolation as the best means of entirely exhausting it."

L. E. Sayre: "I think it a better preparation; am pleased with it, but how about the fellow who don't know how to do expert percolation?"

C. E. Vanderkleed: "Yes, on a large scale."

Question 7. Does the fluidextract of senega, made with solution of potassium hydroxide, keep better than when ammonia water (U. S. P., 1890), which was apt to volatilize, was used?

Answers. A. R. L. Dohme: "Yes."

E. G. Eberle: "I think so."

J. W. England: "Yes."

E. H. Gane: "Too early to say definitely."

Eli Lilly & Co.: "It keeps very well, but so did that made with ammonia water."

A. B. Lyons: "The old fluidextract was perfectly satisfactory as long as kept in well-closed, full packages; it seems probable that the retail druggist will find the new preparation more permanent when kept in his shelf bottle."

H. L. Meredith: "I have not had occasion to prepare this, but am inclined to prefer the 1900 process and formula."

Meyer Brothers: "The potassium hydroxide seems to act better on account of its non-volatility."

L. E. Sayre: "Can't tell yet."

C. E. Vanderkleed: "No."

M. I. Wilbert: "Appears to be satisfactory."

Question 8. Can you suggest any improvement for the fluidextract of senna (U. S. P., 8th Rev.)? May petroleum-benzin, benzene or acetone be used in place of alcohol to remove the resinous, griping principle?

E. G. Eberle: "The question is no doubt asked from standpoint of economy. Before drying express drug to recover alcohol in drug and use a weaker alcohol for exhausting."

Louis Emanuel: "This is a large subject on short notice; get somebody to write a special paper on it."

J. W. England: "No; acetone might be of use, but I know of no experiments."

E. H. Gane: "Experiments under way."

Eli Lilly & Co.: "We can not. In our opinion alcohol is better than any of the solvents mentioned."

A. B. Lyons: "An interesting but most promising subject for experiments. The leaves should not be dried after treatment with strong alcohol, but removed from the percolator and water added sufficient to bring the strength of the alcohol about to that of the second menstruum."

W. Lester McFadden: "Based on limited experiments, I believe that [petroleum] benzin will work very satisfactorily, even better than alcohol."

H. L. Meredith: "Why not cut out the alcoholic percolate altogether and use only the diluted alcohol menstruum?"

Wilbur L. Scoville: "No, but acetone certainly should be tried."

M. I. Wilbert: "Have not tried other solvents, but am inclined to doubt their efficiency."

Question 9. Is the addition of solution of potassium hydroxide to fluidextract of taraxacum desirable?

A. R. L. Dohme: "Yes."

E. G. Eberle: "I doubt it."

J. W. England: "Emphatically no."

E. H. Gane: "We think not."

Lyman F. Kebler: "Have never tried such a procedure."

Eli Lilly & Co.: "Think not."

A. B. Lyons: "Why should it be?"

H. L. Meredith: "No, not desirable and not necessary."

Meyer Brothers: "We think the addition of sodium hydroxide to the stock fluidextract is undesirable, as more precipitate would be formed than normally."

L. E. Sayre: "I rather think so and yet I think we have not obtained the best preparation yet. I shall work on this and report later."

Wilbur L. Scoville: "I see no reason for it."

C. E. Vanderkleed: "No."

Question 10. Is it necessary in your opinion and from your experience to assay tinctures if they are made from assayed drugs?

Answers. ———— (Oakland Station, Philadelphia:) I know of several cases where tincture of opium was made from an assayed drug, U. S. P., and the preparations ran 15 to 20 per cent below the U. S. P. standard; the druggist, with honest intentions, was prosecuted by State Boards of Health or Pharmacy; therefore yes."

V. C. Brookes: "Not if properly percolated or made properly."

C. E. Caspari: "Yes, on account of the personal equation of the workman making the tincture."

A. R. L. Dohme: "By all means. Percolated assayed drugs don't mean exhausted drugs and hence below-standard tinctures result. Diluted assayed fluidextracts assure standard tinctures." [Amen to that. A. B. L.]

H. A. B. Dunning: "Yes, I have had experience however, only with tincture of opium, which rarely if ever represents 10 per cent. drug."*

E. G. Eberle: "Not if carefully made. The chief trouble is to find drugs which assay up to the standard."

Louis Emanuel: "Not if the operator is competent and properly conducts the process of preparation, and yet I have found many who understood the process thoroughly, but through lack of care or indifference failed to make a satisfactory preparation."

J. W. England: "No. Fluidextracts, however made from assayed drugs should always be assayed.

E. H. Gane: "Yes, by all means."

George A. Gorgas: "No, if from reliable house. Have never had trouble with any."

Lyman F. Kebler's reply is beside the question: "The preparation of tinctures from fluidextracts opens up a much mooted question. My personal experience is that tinctures made from standard fluidextracts are of more uniform strength than those usually made by the pharmacist [from unassayed drugs?] by the process of percolation.

Eli Lilly & Co.: "It is, in order to eliminate uncertainty of extraction by percolation and the variation in the drug from aging, moisture-content, etc."

A. B. Lyons: "Yes, for several reasons: 1st. The methods of assay for crude drugs and for fluid preparations made from them are never quite the same, and confessedly give only approximate results. As a rule there is more loss of alkaloid in the assay of the fluid preparation than in that of the crude drug, but there are exceptions. 2nd. Assay of the crude drugs assumes that the sample taken is a fair average of the whole, which may or may not be true; the tincture (or fluidextract) on the other hand must necessarily be of uniform strength throughout. 3d. This drug does not necessarily remain true to assay, it may gain or lose moisture and often deteriorates rapidly with age. 4th. Assay of the tincture is a useful check on the previous assay of the drug. 5th. The wise pharmacist will take no chances when laws require that tinctures must answer to pharmacopœial tests."

W. Lester MacFadden: "Not really necessary in most cases, but there are enough exceptions to make it desirable."

H. L. Meredith: "If the manipulator is a careful manufacturer, it is not necessary with tinctures. In the hands of the unskilled and careless, assaying is necessary. My experience teaches me to stand clear of the unskilled and careless."

Meyer Brothers: "It is necessary in order to check up the assay and to eliminate any error on the part of the operators."

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* A tincture of opium not deficient in strength may be made by the following process: Mix 100 Gm. powdered opium with 50 Gm., calcium phosphate, pumice or other suitable agent and percolate with dilute alcohol (1000 Cc.) Collect percolate set aside and then exhaust the opium with water. Evaporate aqueous percolate to small bulk, add equal quantity [volume] of alcohol and filter, washing filter with enough diluted alcohol to make up the required measure. I suggest this method because by either the old U. S. P. method or the new, the opium is not exhausted as is proved by assay. The finished tincture on standing does not deposit greatly, if at all.

Wm. Mittelbach: "No."

E. L. Patch Co.: "It is necessary in our opinion to assay the tinctures, even if they are made from assayed drugs."

Geo. F. Payne: "Yes. I have had a great deal of experience involving many thousand analyses, where combinations are put up from analyzed materials and have found that as a general thing it is very necessary to assay the finished product."

W. A. Puckner: "No."

L. E. Sayre: "Only as a means of showing that they are thus made. We should have a process for the detection of those not made from such drugs."

Wilbur L. Scoville: "Depends on the operator who makes the tincture."

C. E. Vanderkleed: "Yes."

M. I. Wilbert: "Not when made by a careful operator."

Question 11. Has any serious accident come to your knowledge, due to the changes in strength of many official tinctures, especially those of aconite, veratrum, cantharides and strophanthus?

Twenty-one replies were received, all in the negative. At the same time it is to be remembered that "accidents" of this kind are not talked about by those who know of them.

H. L. Meredith says: "No; but we always inquire from a physician when he 'phones a prescription whether he expects the 1890 or 1900 strength, always calling his attention to the difference. A prescription presented at our counter receives 1900 strength of all preparations unless tincture aconite and strophanthus, when in event the doses permit of a doubt, we either get into communication with the physician or use our best judgment in the matter. We do not permit our clerks to use their judgment in such matters."

Question 12. Does the new tincture of kino, made by heating the mixture for an hour to destroy the enzymes, remain fluid and not tend to gelatinize?

Answers. A. R. L. Dohme: "No experience personally."

H. A. B. Dunning: "That which we have on hand, nearly a year old, is all right."

E. G. Eberle: "Would suggest storing it in small bottles also."

Louis Emanuel: "Have had little trouble with the old method, perhaps because I made small quantities at a time."

J. W. England: "Apparently yes, but the time is too short to tell."

E. H. Gane: "Yes; but for how long we cannot tell."

George A. Gorgas: "Has not gelatinized thus far."

H. L. Meredith: "The time has been too short to speak positively on the matter; the 1890 tincture would keep nicely for two years when carefully prepared."

Wilbur L. Scoville: "No trouble with it thus far."

C. E. Vanderkleed: "No gelatinization after standing one year."

M. I. Wilbert: "Yes. A corresponding preparation of kino made two years ago is still fluid, while the control, kept under identically the same conditions, became solid within 3 or 4 months."

Question 13. Do the new tinctures of sweet orange peel and lemon peel (50 Gm. to 100 Cc.) satisfactorily take the place of the former spirit, for flavoring purposes, and can the fruit be secured at all seasons of the year, throughout the country?

V. C. Brookes: "Yes. We can usually get the fruit without any trouble."

A. R. L. Dohme: "No; fruit scarce at some seasons and expense necessarily high."

H. A. B. Dunning: "The new tinctures are superior to the old, but more expensive, both as regards time and money."

E. G. Eberle: "From a pharmaceutical standpoint, yes. We have no trouble here to secure supply."

J. W. England: "Both useful; the fruit cannot be had at all seasons of the year."

E. H. Gane: "Yes, much preferable. The fruit can be secured at all times in New York at a price."

A. B. Lyons: "In point of quality yes, but too costly for the druggist who buys his tinctures. Except in country places, the fruit can be had generally during the last six months in the year, but comparatively few druggists are enterprising enough to make the tinctures, and to most of those time is too valuable. Hence 'the trade' is satisfied with the old spirits, which after all were not half bad."

W. L. McFadden: "Entirely. Stock can readily be anticipated."

H. L. Meredith: "We prefer the former spirits; the acidity of the new tinctures is to me objectionable."

Meyer Brothers: "The tinctures of the peel are preferable, being free from the turpentine flavor generally present in the oils from which the spirits are made."

Wm. Mittelbach: "I think so."

George F. Payne: "Since the introduction of cold storage, it has become possible to secure oranges and lemons in perfect condition in all cities and large towns, but I think it must be still troublesome in many places to procure such fruit."

Wilbur F. Scoville: "Yes."

C. E. Vanderkleed: [to the first question] "Yes."

M. I. Wilbert: "They are preferable to dilute oils. Should be prepared when fruit is obtainable."

Question 14. Has there been any complaint due to the presence of potassium iodide in the tincture of iodine, and its crystallizing on a surface to which the tincture has been applied?

Answers. V. C. Brookes: "Have heard no complaint."

A. R. L. Dohme: "None."

H. A. B. Dunning: "No."

E. G. Eberle: "Have not heard of any complaint."

Louis Emanuel: "Not thus far."

J. W. England: "No, but the process of making should be changed. The solids should be triturated with the alcohol until dissolved, or preferably (if that were official) with a very small amount of water first and then with the alcohol. The U. S. P. process consumes too much time."

E. H. Gane: "We have heard of none."

George A. Gorgas: "Have had no complaint. Personally I would rather have it eliminated.

A. B. Lyons: "No, and I do not look for any."

H. L. Meredith: "No, but it should be explained to the physician before he uses it. It instils a degree of confidence in the druggist. Physicians as a class know very little of the changes in the Pharmacopœia."

Meyer Brothers: "We have received no such complaint."

Wm. Mittelbach: "No, I believe the old formula was better." [It should be explained that potassium iodide is added because it has been found by experience that the tincture containing it does not rapidly lose strength, as the simple tincture invariably does.]

E. L. Patch Company: "No complaint."

L. E. Sayre: None by physicians, but some of the druggists have told me that it cannot be the same preparation. I think they have gotten the idea from physicians, however."

Wilbur L. Scoville: "No."

C. E. Vanderkleed: "None reported."

M. I. Wilbert: "No. We use comparatively little of the tincture for external application, a solution of iodine in saponated petrolatum, N. F., being preferred."

Question 15. Is the use of purified petroleum-benzin satisfactory in the preparation of the tincture of deodorized opium? Would not a better plan be to make an aqueous extract of opium, reduce it to a syrupy consistence, and dilute to standard strength with 25 per cent. alcohol?

Answers. A. R. L. Dohme [in reply to the first question]: "Not fully. Why not percolate at once with 25 per cent. alcohol?" [Because the preparation would not be "deodorized." A. B. L.]

E. G. Eberle: "In my experience not so satisfactory as ether. I believe a better plan is to deodorize the opium first."

J. W. England: "No. The official method is satisfactory. Proposed process would be unsatisfactory, because it does not remove all the therapeutically-objectionable principles of opium. In addition, the use of heat in making opium preparations should always be avoided if possible, because heat readily decomposes the opium alkaloids."

E. H. Gane: "No. The latter suggestion seems good, but we are still experimenting."

L. F. Kebler: "So far as my experience goes, purified petroleum-benzin has not been satisfactory in making tincture of deodorized opium. The process may succeed on a small scale, but it is certainly undesirable and dangerous on a large scale. We found in practice that the best way to make this tincture was to begin with opium which had been denarcotized for a considerable length of time with a high grade of methyl acetate, but this solvent has become too costly to be used for such a purpose.

Eli Lilly & Co.: "The better plan is to exhaust opium with repeated washings of water at ordinary temperature and reduce the clear liquid carefully (in vacuo) to a suitable volume. Then completely deodorize with purified petroleum-benzin, adding finally the required amount of water and alcohol. Hot paraffin may also be used with good results.

A. B. Lyons: "Petroleum-benzin is objectionable for many reasons. I believe that a perfectly satisfactory preparation can be made by exhausting the opium with cold water, preferably distilled, exactly as in the opium assay process, concentrating the extract to a syrupy consistence, pouring this into ten times its volume of water, filtering after the precipitate of narcotine, etc., has subsided, washing the precipitate with a small quantity of water, and making up to a standard strength. The finished preparation should contain not more than 25 per cent. of alcohol."

W. Lester MacFadden: to question 1, "Yes, unless paraffin can be adopted." To second question, "No choice."

H. Lionel Meredith: "The less complicated a mode of procedure the more uniform the result obtained. I like this latter suggestion."

Meyer Brothers: "We find the use of petroleum-benzin perfectly satisfactory, and fail to see how the alternate method suggested would deodorize or remove the narcotine." [It will deodorize all right; denarcotizing is really a mistake, in the judgment of many although it reduces the bitterness of the tincture. A. B. L.]

Wm. Mittelbach: "I never did like the use of petroleum-benzin in making this preparation. See no objection to later suggestion."

William L. Scoville: "Have used ether only. The ether is then used up in making salicylated collodion. Think paraffin preferable to benzin."

C. E. Vanderkleed: "The purified petroleum-benzin is satisfactory, but it has its disadvantages. Instead of treating the concentrated aqueous solution by washing with benzin, chill it with ice and salt, and filter while cold."

MISCELLANEOUS NOTES AND COMMENTS BY MEMBERS OF THE COMMITTEE AND OTHERS.

E. L. Patch: "It is impossible for the pharmacist to find any official oil of rosemary. The Pharmacopœia probably copied an old statement from Schimmel & Co. when they established the standard of 5 per cent. bornyl acetate and 15 per cent. total borneol. No such product can be obtained. The report of the Committee on adulteration will show that none of the oil from the several dealers in essential oils meet the pharmacopœial requirement. Schimmel & Co. in their last semi-annual report state that there are good oils containing as low as 1.2 per cent. of bornyl acetate and total borneol not exceeding 10 per cent. A sample of their own best oil showed 2.89 per cent. bornyl acetate and 9.67 per cent. total borneol, their "extra" contained 2.29 per cent. bornyl acetate and 8.88 per cent. total borneol."

Glycerite of the phosphates of iron, quinine and strychnine is described in the Pharmacopœia as a liquid. In fact the preparation solidifies soon after it is made.

A letter recently received by Mr. Patch from Dr. J. M. Francis calls attention to the fact that the Pharmacopœia calls for an absolutely colorless oil of peppermint, which would mean rectified oil. This commands a fancy price and is obtainable at present from only one or two sources. Much of the market oil will bear all the pharmacopœial tests but that of color, and for the great majority of purposes the small amount of color which the natural oil contains can certainly be no objection. Dr. Francis also calls attention to the fact that specifications under oil of savin as to rotation apply only to the German oil, effectively shutting out pure American and pure French oil.

Henry C. Blair writes: "The present U. S. P. is unsatisfactory as a working formulary for me as a retail pharmacist. Evidently the intention of the committee was to get up a book for manufacturers and for a legal use and not for the ordinary druggist."

Lyman F. Kebler also considers the present edition of the pharmacopœia less serviceable in the drug laboratory than its predecessor, but does not specify in what particulars it is more deficient.

Wm. Mittelbach offers these comments: "The two cinnamon barks, so entirely different in flavor, should if possible be more distinct in names, so as to leave no room for substituting the one for the other."

"The recognition of more than one part of the same plant, as in the case of belladonna and colchicum, is a mistake. It leads to substitution. Let us determine which part of a plant is most desirable and recognize that exclusively." [There remain in fact but few cases where this has not been done. In those there are solid reasons for retaining both. No doubt in the good time that is coming, we shall eliminate all crude drugs and use their pure, active principles instead. A. B. L.]

"Why do we have two strengths of rose water and orange-flower water. The keeping qualities of the stronger waters are so much better that it seems that the recognition of these only would be a step in the right direction."

"The two oxides of mercury are still side by side as of yore. I suppose they being twins are therefore inseparable. Are they not really the same thing under different names and somewhat different garbs so to speak? The red oxide when of the same degree of fineness as the yellow is identical with it in all respects. Then, if there is no difference chemically, therapeutically or otherwise, why do we see double? Wouldn't it be more scientific and up-to-date to drop the red oxide?" [It may not be wholly a question of science. The physician may have his reasons for choosing now one and now the other of two articles so different in appearance even if they are chemically identical. There may be virtue in a "change of medicine" sometimes in tedious cases or where a patient has conceived an unreasonable prejudice against a particular remedy. A. B. L.]

C. S. N. Hallberg offers these suggestions: "First of all, there should be a systematic canvass made of what medicinal substances are really used in North America, and of course with special reference to their use in medical practice. This has been done in former years, but never quite as thoroughly as is desirable. I suggest that the A. Ph. A. [through our committee] get one or more members in every large city to make a report on 1000 consecutive prescriptions. Now is the time to do it, and not after the call has been issued for the convention in 1910.

"The subject of doses is also one which I think should be started—not that I share the views expressed by some that the doses of the Pharmacopœia are generally speaking incorrect, but it would be well to ascertain from prescriptions the actual practice of American physicians.

"The nomenclature of chemical compounds should be thoroughly thrashed out now before the convention meets so that we can then determine definitely whether the present nomenclature should be changed to that of the A. A. A. S."

Reid Hunt writes: "Some of the severest criticisms on the new Pharmacopœia seem to have come from those who object to the incorporation of so many mixtures and substitutes for preparations that are virtually proprietary medicines. Personally, I should like to see the Pharmacopœia limited as much as possible to definite simple preparations, to which tests and standards capable of verification can be applied. As the Pharmacopœia becomes more and more a legal standard, it seems to me that it is more and more desirable that mere mixtures should be eliminated and relegated to the National Formulary. Liquor antisepticus and cataplasma kaolini should never have been made official."

E. G. Eberle submits the following notes:

"Diluted hydrobromic acid; is there any objection to inserting formula for its preparation by double decomposition between potassium bromide and tartaric acid?

Hypophosphorous acid should be made of 50 per cent. instead of 30 per cent. strength.

Aloes, aloin-content should be stated.

Aqua hydrogenii dioxidi; by present description this is slightly acid. If made from sodium perborate it would be alkaline. Since slight alkalinity is sometimes to be preferred to acidity, should not alkalinity be permitted?

Benzinum purificatum; only test and description should be given and benzinum omitted.

Ceratum camphoræ; omit liniment of camphor, increase white petrolatum and dissolve in it 20 Gm. camphor.

Ceratum resinæ comp.; should be transferred to the National Formulary.

Emplastrum plumbi; unnecessary to use dried soap.

Extract sumbul seems to be an unsatisfactory preparation.

Fluidextract of triticum could be made as well by digestion as by percolation.

Liquor antisepticus belongs in the National Formulary, so also aqua hamamelidis and the added emulsions and oleates.

Liquor chlori comp., made according to the U. S. P. will not assay 0.4 per cent.

Syrup of ferrous iodide, by U. S. P. formula is not neutral; is there any objections to adding hypophosphorous acid to solution of ferrous iodide before filtering?

Asafetida should be purified by dissolving in alcohol. The tincture should then be made from the purified asafetida.

Tincture strophanthus, remove fat before percolation.

Tincture nux vomica should be made from the fluidextract, rather than from the extract, if not made from the drug.

Ointment of ammoniated mercury, use wool-fat instead of hydrous, rub up the ammoniated mercury with water and incorporate wool-fat, then add white petrolatum.

Diluted mercural ointment, use white petrolatum; the yellow gives the preparation a greenish color.

Collodion, add to the pyroxylin first alcohol and afterwards the ether; solution is thus more readily effected."

Signed,
REID HUNT,
E. FULLERTON COOK,
LYMAN F. KEBLER,
E. G. EBERLE,
E. L. PATCH,
GEORGE M. BERINGER,
C. S. N. HALLBERG,
CHARLES E. CASPARI,
WILLIAM MITTELBACH,
A. B. LYONS, *Chairman.*

The Chair said it was not within the province of the Section to adopt the report of the Committee on U. S. P., but he would be glad now to recognize anyone who desired to speak on the assay processes of the Pharmacopœia.

Mr. Puckner offered the following resolution, which he said he had been requested by Mr. Rusby (who had to leave the city) to present, and which he would second:

> *Resolved*, That the Scientific Section of the American Pharmaceutical Association request the Revision Committee of the U. S. Pharmacopœia to re-examine the assay processes at present official, and, if found desirable, to publish a supplement to the Pharmacopœia, to contain such changes as are deemed important.

Mr. Remington: Mr. Chairman, I would say that the Pharmacopœial Revision Committee has no authority to issue a supplement, but there is a way to correct that. If there are any errors in the Pharmacopœia, the Committee has the right to correct them, and if errors are pointed out the Committee will correct them; but there is absolutely no necessity for any supplement.

The General Secretary: I do not think it is so much a question of error, as that the processes are not quite as perfect in some cases as they might be.

Mr. Remington: Of course the Section can pass any resolution it sees fit, but there is a better alternative than the publication of a supplement. In every revision of the Pharmacopœia there have been errors—typographical errors, or something of that kind. If any of these processes should be found to be so defective that it cannot be used, there is already power vested in the Committee of Revision to make the necessary changes, and we will take any error which is pointed out and refer it to the appropriate sub-committee and have that committee report upon it, and upon the basis of that report it may be changed.

The Chair: Is it possible to cut out of the Pharmacopœia an entire method of assay and substitute another?

Mr. Remington: Yes, I think so; if it is found to be erroneous or not capable of successful operation.

Mr. Kremers: I would like to say that the convention of 1900 gave specific instructions to the Revision Committee to issue a supplement in five years.

Mr. Remington: They have the right to issue the Pharmacopœia or to issue a supplement within five years; but to issue a supplement in five years, when the Pharmacopæia came out in 1905, would make it 1910.

Mr. Puckner: I believe it would not take very long to revise these assay processes, some of which may have been introduced without having been actually tried. I will say this, that in many cases the methods have been worked out by the drug—the processes themselves. I don't think the processes should be abandoned, but only certain parts of them should be revised. I believe Dr. Lyons could revise or recast most of them within six months—that is, the method of completing the assay of the drug. In the case of nux vomica, for instance, I think in six months the Approximate Assay Committee could correct the assay method so as to make it entirely satisfactory.

Mr. Francis: I don't want to pose as a Jeremiah in this Association, but so long as the Pharmacopœia only possessed an academic interest it was perhaps not so important for us to give it attention; but since the Federal law which has been recently enacted is based upon the specifications of the United States Pharmacopœia and the National Formulary, these assay methods become a matter of very great interest and importance to all pharmacists, not only the manufacturing pharmacists, but the retail pharmacists as well. I think perhaps some of the gentlemen may adopt the attitude that the Federal law is an interstate law, and that it is up to the manufacturing pharmacist alone. Perhaps it is; that is neither here nor there. But granting that it is an interstate law, applying only to the manufacturers, it should not be forgotten that, sooner or later, the various States of the Union will adopt Pure Food and Drug Laws, and it is very probable they will adopt the terms of the Federal law as the basis of their laws on this subject, so that every man in the profession is going to be touched by the operation of this law.

I have no actual data with me, as I had not expected to discuss this subject, and it is very difficult for me, therefore, to point out these assay methods that deserve reconsideration, but I think some of them may be the source of very grave error. I do not think the operation of the Federal law, the Pure Food and Drug Law, as it will be put in force by the Government officers, is likely to work very much injustice, because these gentlemen are familiar with the limitations of the assay processes; but I do fear that it may happen, in some instances, that the officers of the State boards, being less familiar with the results of these assay processes, may do great injustice.

Now take the nux vomica assay. I don't know how many of you will agree with me, but I consider this assay process as adopted in the eighth revision of the Pharmacopœia a very poor substitute for the one that was abolished.

I thought that the process of determining strychnine by oxidation with nitric acid had been tried out and condemned years ago, and it was consequently a matter of surprise to me to find that it has been revivified and adopted by the revision committee of the United States Pharmacopœia. I think it is generally conceded that no process for the assay of nux-vomica preparations, which is based upon the separation of the strychnine from brucine, is sufficiently correct to possess any advantage over the process formerly official, namely,—that of estimating total alkaloids.

Turning now to the present official process for the valuation of preparations of cinchona, the method is to my mind possessed of absolutely no advantage over the one previously official. It does not determine quinine alone but ether-soluble alkaloids which of course means both quinine and quinidine. The conditions demanded in properly executing this cinchona assay are so very exacting as to render it unfit for the use of the chemist or pharmacist who is lacking in very considerable skill, and more particularly, a great deal of experience. I certainly think that in these two assays we have over-shot the mark and have sacrificed processes which were simpler and fully as satisfactory for those which, while seemingly more exact and scientific, are really under the average conditions under which they are applied, less liable to yield true results.

Personally, I do not agree to the value of the process for determining strength of aconite. And there are some others that might be referred to, but I will not take up your time now.

I also want to call your attention to the following general criticism of the assay processes; some of these alkaloidal assays specify an exact amount of acid that shall be used in removing the alkaloid from the immiscible solvent. Please remember that exact proportions are given. Then in some cases it is directed that, after making the acid solution alkaline, the active principles are to be extracted by shaking out with a definite amount of immiscible solvent and also a definite number of portions of the same. The Pharmacopœia states that you shall agitate for a certain number of minutes, or perhaps agitate a certain number of times, and then allow to stand for a certain number of minutes.

Now I know as the result of experience that, following the instructions given there absolutely, you do not remove all the alkaloid contained in the immiscible solvent, or, in the second place, in the acid solution; and the result is that from this assay process you are liable to fail to get the full strength of the extract by from 20 to 35 per cent., and in rare cases even 50 per cent. Nor is it sufficient to say that all the assayer has to do is to exercise a little common sense and continue the shaking-out process until the entire amount of the alkaloid is extracted. The law, unfortunately, is not always common sense, or equity either; and in some instances, where it is required to shake it out three times, or three operations are required, I believe if it came to a court decision it would be held that the law required exact conformity to the text of the Pharmacopœia, nothing more, nothing less. Suppose you or I should make a fluidextract and test it, what evidence have you that the chemist of some State Pure Food and Drug Commission, say in Iowa or Indiana or Georgia, is going to exercise common sense and shake out all the alkaloid and test your product thoroughly? The assay of your product results high or low, and the retailer is subject to prosecution under the law in force. In Georgia they have enacted a Pure Food and Drug Law practically adopting the Federal law as a basis. The state of New York has a law which specifically states that the United States Pharmacopœia shall be the basis. The result is that there is trouble for somebody. I say if we don't decide to change these assay processes and substitute for them better methods of assay, they ought at least to be changed in the minor particulars I have pointed out, for as they stand they are liable to result in great injustice.

The Chairman: I agree in the main with what Dr. Francis has said, but as to the point he makes as to the number of minutes the solution shall stand, or as to the number of times it shall be shaken out, I would suggest that there is a chapter in the back of the Pharmacopœia called "Immiscible Solvents," I think, and in that it is stated that these tests for the residue of alkaloids shall be made, and the process continued until the alkaloid is removed. That is a separate chapter.

Mr. Francis: In reply to the Chairman, I accept his correction. I did not just remember that point. But in some of these assay processes it is specifically set out that the solutions shall be tested to determine whether the extraction is thorough, while in others it is not. If the general directions as given in the back of the book were intended to apply, why should specific instructions be given in some assays and not in others?

Another thing I want to protest against most heartily is the provision to use hematoxylin as an indicator. I don't believe any pharmacist can assay a drug *five* times and obtain duplicate results twice using hematoxylin as an indicator. Why not use cochineal if we want to? I have no objection to anybody's using hematoxylin who so desires, but I consider it wholly impracticable and an imposition upon those who prefer to use cochineal.

Mr. Lloyd: I take it that the Pharmacopœial Committee will take this matter in hand and see that these conditions are changed. It is a very important matter, it is not as it was formerly, it is very different now. The United States Government has now taken hold of a matter that heretofore was a pharmacopœial process only, and it is the duty of the Pharmacopœial Committee, as it is the duty of the committee generally, to avail themselves of all opportunity for improvement.

Now another subject which was mentioned in the report of committee made by Dr. Lyons—that of opium assay. It was a part of my duty whilst studying conditions in the Orient to take up the subject of opium, and while I was there I was introduced to Mr. Alfred Kenn, who has been purchasing opium for the great opium consumers and importers for twenty-five years. During that time it has been purchased on assay, paid for on assay, and shipped to this country on assay, and, by the way, they have a laboratory there, complete in every detail, with the most improved equipment and apparatus, and a library covering the entire subject of opium, and Mr. Alpier has given twenty-two years of his life working in opium; and when I told him about the pharmacopœial process he said: "I cannot use it, the results are too low, I can get more morphine than the pharmacopœial process gives me." I cannot tell you the amount that he gets over the pharmacopœial process, but he said he could not use that process, because he could get so much more. I brought some of the alkaloid home with me, and have the samples at Cincinnati. Possibly there is a process that in the hands of an expert working on opium only may average higher than the pharmacopœial process for the assay of opium; I rather think there is. The alkaloid produced by Mr. Alpier is in crystals and pure white.

Mr. Lyons: There is one further point of criticism of the present U. S. P. opium assay process that I failed to mention in my report. We are directed simply to treat the crude morphine in an Erlenmeyer flask with a certain quantity of limewater. It should be required that the capacity of the flask be such that the limewater shall nearly fill it, and further precaution should be taken that the filtration be so conducted that there shall be no considerable absorption of carbon dioxide possible, since obviously such absorption will vitiate the result. I have recently been using with much satisfaction, in place of limewater, the liquor calcis saccharatus of the British Pharmacopœia. Two cubic centimeters of this will suffice, in an ordinary assay, to dissolve the whole of the morphine, and the solution is effected in less than five minutes at the longest. I add also about 15 Cc. of water, and I find the time of the assay materially shortened. I have used this same solution also in place of lime in the lime process of opium assay, and am pleased with it.

The Chairman: I would like to say a word, if nobody else wants to to speak, about the assay of tincture of aconite, which we all know is laborious and tedious. When it comes to filtering, it takes three days to filter it, to say nothing of washing. I have tried it with different filter-papers, and it seems to clog the pores, invariably. If there is some way of remedying that, I would like to know it.

The General Secretary: Have you tried powdered pumice-stone? This was a suggestion made by Prof. Stevens, but the Revision Committee did not see fit to introduce it. I have never had difficulty in filtering aconite mixtures with the aid of pumice.

Mr. Puckner: While everybody is objecting to the various Pharmacopœial assays, I want to say a word in their favor. In my experience with Prof. Steven's method of assaying aconite, I have found the results by weight and titration to agree quite closely. No other method for aconite does that so well, and for that reason I think well of the method itself. Although, because of difficulty in filtration, the method is slow, I have much confidence in it because of close concordance between the weight of residue found and alkaloid indicated by titration.

Mr. Francis: I would like to call the attention of the gentlemen to the fact that they are going contrary to the law in using these things.

Mr. Remington: I would like to make a suggestion by way of substitute for the motion of Dr. Rusby. If we have a supplement, it cannot be until five years after the Pharmacopœia was issued. I think the same object can be accomplished, however, by requesting the Secretary of this Section to send to the Chairman of the Revision Committee the suggestions and propositions which have been made here to modify or correct the processes of assay of the Pharmacopœia, to forward these suggestions, with the expression of desire on the part of this Section that these assay processes in question be so modified.

This motion was seconded by the General Secretary, and put to a vote and carried.

Mr. Edward Kremers presented in brief abstract a paper by himself and Frank Rabak on some new artemisia oils, the full text of which is as follows:

NOTES ON SEVERAL NEW ARTEMISIA OILS.

BY EDW. KREMERS AND FRANK RABAK.

Artemisia frigida, Willd.[*] A first report on this oil has already been made.[†] During the summer of 1905 a somewhat larger amount of oil, yielding 0.3 per cent., was distilled. (Webster, S. D.) Although insufficient for a thorough chemical investigation, a record of physical constants may be of some value. The constants of the oil distilled during August, 1905, were taken in October of the same year. For the sake of comparison the constants of the oil of 1904, as found at that time, and as retaken in 1906, after standing for about two years, are herewith tabulated:

Description of oil.	Sp. gr.	a^D	Acid No.	Ester No.	Sap. No.	Sap. No. after acetylization.
Oil distilled 1904	..0.927	—24°48′ in 100 Mm. tube.	1.2	31.8	33	——
Oil distilled 1904[‡]	..0.931	—25°10′ in 100 Mm. tube.	3	45	48	143
Oil distilled 1905	..0.933	—23°40′ in 100 Mm. tube.	2	35	37	139

The odor of both oils reminds strongly of cineol; the odor reminding of fatty acids noticeable in the fresh oil seems to disappear on standing.

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[*] This plant was identified by Dr. R. H. Denniston.

[†] Pharm. Rev., 23, 128.

[‡] Retaken after two years.

The oil was found to be soluble in ½ volume or more of 90 per cent. alcohol, a clear solution resulting.

The phosphoric acid test indicated the presence of cineol, but the exact amount could not be determined. While the oil reduced an ammoniacal (?) silver nitrate solution (Liebig's test), it gave no aldehyde reaction with fuchsine solution in sulphur dioxide (Schiff's test).

Artemisia Leudoviciana, Nutt. The fresh herb distilled in Webster, S. D., during August (?) 1905,[*] yielded but 0.27 per cent. of a yellowish-green oil, which, upon standing, soon became yellow. The odor, while cineol-like, lacks the pleasantness of that of *A. frigida*. The taste is acrid, cineol-like.

The physical constants of the 1905 oil were determined in October of the same year, and those of the 1904 oil redetermined at that time, with the exception of acid, ester and saponification numbers, which were determined in August, 1906. For the sake of better comparison they are herewith tabulated:

Description of oil.	Sp. gr.	a_D	Acid No.	Ester No.	Sap. No.	Sap. No. after acetylization.
Oil distilled 1904 ..	0.929	—16° 14′ in 100 Mm. tube.	4	10	14	——
Oil distilled 1904[†] ..	0.930	—13° 32′ in 100 Mm. tube.	4.3	14	18.3	——
Oil distilled 1905 ..	0.931	—17° 20′ in 100 Mm. tube.	0	26	26	116

The phosphoric-acid test gave positive indication of the presence of cineol, though the exact amount could not be ascertained. Ammoniacal silver solution was copiously reduced and the fuchsine test gave a slight pink color-reaction after twelve hours, thus indicating the presence of aldehyde.

The oil gave a clear solution with ½ volume or more of 90 per cent. alcohol.

The amount of oil was too small for further study.

Artemisia caudata, Michx. The fresh herb distilled in August, 1905 yielded but 0.13 per cent. of a light straw-colored oil,[‡] possessing a sweetish odor. Taste, sweetish, not unpleasant. The physical constants were taken in October of the same year and those of the 1904 oil retaken in order to observe what changes had taken place upon standing.

Description of oil.	Sp. gr.	a_D	Acid No.	Ester No.	Sap. No.	Sap. No. after Acetylization.
Oil distilled 1904 ..	0.920	—12° 30′ in 100 Mm. tube,	0	17	17	Insufficient.
Oil distilled 1904[§] ..	0.887	inactive.	20	73	93	amount
Oil distilled 1905 ..	0.8418	—24° 20′ in 100 Mm. tube,	0	29	29	of oil.

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[*] Comp. Pharm. Rev., 23, p. 128.

[†] Retaken, 1905–1906.

[‡] Comp. Pharm. Rev. 23, p. 128.

[§] Retaken 1905–1906.

The oil distilled in 1904 after standing 2 years became extremely viscid, odor lost all its sweetness and became decidedly lemon-like and taste was very acrid.

The differences in the constants of the oil distilled in separate years are no less remarkable than those of the same oil produced by age. The oil evidently contains some very changeable constituents and on this account as well as because of its striking differences from the other oils of the same genus merits further attention and study.

The oil yielded a turbid solution with 2 volumes or more of 90 per cent. alcohol.

Heated with ammoniacal silver nitrate test-solution, a silver mirror was produced; with fuchsine solution a deep purple color-reaction was obtained in a short time, thus indicating the presence of appreciable quantities of aldehyde.

The Chair called for the installation of officers as the final business of the session, and noted the fact that Mr. Reid Hunt, of Washington City, Chairman-elect, was the only one of the new officers of the Section present in the room. He appointed Mr. Puckner and Mr. Lyons a committee to escort Mr. Hunt to the Chair. The committee performed this duty, and Mr. Puckner introduced the gentleman. Mr. Caspari said a few gracious words to Mr. Hunt as his successor in the office of Chairman. Mr. Hunt spoke briefly, expressing his appreciation of the honor, but said he was inclined to think he could better serve the Section in the ranks; however, he would do the best he could. He then took the chair.

A motion to dispense with the reading of the minutes was carried, and the Chair said if there was no further business before the Section, a motion to adjourn would be in order.

Mr. Sayre raised the point of giving the authors of papers more time to get them in, and thought the requirement of six weeks in advance of the meeting was too stringent. When he was Chairman of the Section, they only had to be in two weeks before the meeting, to insure their being printed.

The General Secretary explained that the object was to secure the preparation of abstracts to be read before the Section, and thereby do away with the necessity of printing papers in advance of the meeting. The Council had this in view in adopting the regulation, and it was believed it would be found desirable, not only for the authors of papers, but as greatly facilitating the work of the Section by having five- or ten-minute abstracts, instead of attempting to read so many papers in their entirety.

Mr. Sayre suggested that if the author had his paper in print he could abstract it very much better.

The suggestion was not further pressed.

On motion, the Section then adjourned.

Papers read by title and referred for publication.

OIL OF CEDAR LEAVES.

BY I. W. BRANDEL.

Commercial cedar-leaf oil is generally obtained from the leaves of both *Juniperus virginiana*, L. and *Thuja occidentalis*, indiscriminately and even from other conifers. Genuine cedar-leaf oil, *i. e.*, the oil from the leaves of *Juniperus virginiana* seems to have been distilled but once.*

The exceedingly pleasant odor coming from a cedar branch hanging in a room, induced the writer to distill a quantity of leaves from the common red cedar, *Juniperus virginiana*, L. The leaves were collected in the fall of the year in the vicinity of Seattle, Wash., and were distilled as soon as collected. A yield of 0.47 per cent. of oil was obtained.

The following table contains a comparison of the properties of this oil, not only with commercial cedar-leaf oils but also with the genuine oil, referred to above, distilled by Schimmel & Co.:

	Oil Distilled by Writer.	Oil Distilled by S. & Co.	Commercial Oils.
Specific gravity	0.9130 at 15°	0.8870	0.868 — 0.920
a_D	+ 2° at 20°	+ 59° 25′	— 3° 40′ — 24° 10′
B. P. of bulk of oil	190° — 198°	below 180°	

The oil had a light-yellow color and a peculiar yet pleasing odor. From the table it can be seen that this oil differs entirely from cedar-leaf oils previously distilled. The most remarkable difference is its chemical composition as indicated by its boiling-point. While cedar-leaf oils consist largely of terpenes (b. p. below 180°), the oil examined contains practically no terpenes, none of the oils distilling over below 180° C. The oil had a saponification number of 11.1 equivalent to 3.89 p. c. of bornyl acetate, saponification number after acetylization, 30.3, corresponding to 8.28 p. c. of total borneol.

That the alcohol and its ester are borneol, is shown by the fact that a fraction of the oil, 198°–210°, after oxidation at room temperature with nitric acid, sp. gr. 1.4, yielded camphoroxime melting at 117° C.

Fraction 190°–195° had the strong characteristic odor of the original oil, reminding somewhat of fenchone. Although the boiling-point agreed with that of fenchone no crystalline oxime could be obtained. A larger quantity of oil is now being distilled and a further report will be made.

School of Pharmacy, University of Washington.

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* G. H. K.. The Vol. Oils, p. 278.

OIL OF SANTAL.

BY A. R. L. DOHME AND HERMAN ENGLEHARDT.

On account of its high price, santal oil (especially the grade used so extensively for medicinal purposes during the last thirty years) is subjected frequently to adulterations and substitutions. Hence the pharmacopœias of different countries have adopted standards for the purity of the oil, which standards correspond fairly well with each other. The U. S P. (8th Revision) describes the oil as a pale-yellow, somewhat thick liquid having a peculiar aromatic odor and a pungent, spicy taste. When assayed by a given method it should contain not less than 90 per cent. of santalol. The specific gravity should range between 0.965 and 0.975 at 25° C., and its angle of rotation should be between –16° and –20° in a 100 min. tube at 25° C. It should be readily soluble in alcohol, its alcoholic solution should be slightly acid to litmus paper, and it should also be soluble in 5 volumes or less of 70 per cent. alcohol.

As large quantities of santal oil are distilled in our laboratories, and we have found at times that the oil produced did not answer the above requirements perfectly, we thought it advisable to trace these discrepancies, and to try the different brands of sandalwood which we were able to purchase at recent auctions in the Mysore district of India.

The shipments were from 500 lbs. to several tons each, and from the 17 classes obtained, 13 have been distilled up to time of writing, and the distilled oil subjected to the following investigations. The woods purchased are arranged according to the prices paid, No. 1 being the most expensive, No. 12 the cheapest. No. 13 was sandalwood sawdust.

1. Root, first class.
2. Billets, first class.
3. China Budh.
4. Fraserpett Panjam.
5. Ghotla.
6. Hunsur Ghat Badla.
7. Shimoga Panjam.
8. Bagaradad.
9. Roots, third class.
10. Jugpokul, first class.
11. Cheria.
12. Hatri Chilta.

It may be mentioned right here, that in no case were less than 500 lbs. of wood distilled, and that in several cases the total amount of the oil obtained from two or three tons of wood was examined.

The distillation was carried out in the usual way. The first distillate amounting to about 5 per cent. was kept separate; the second distillate representing about 93 per cent. of the oil distilled, was obtained by distilling until the distilled oil became darker. The third and last distillate, which was darker in color and amounted to about 1½–2 per cent., was kept separate also. The yield of the oil from the wood varied from 3.95 per cent. to 6.18 per cent., the sawdust giving only 2.26 per cent. These figures are considerably higher than those given in "Gildemeister and Hoffmann : The Volatile Oils," which give a yield of 3 to 5 per cent. of oil for East Indian sandalwood. The high-priced woods gave a high yield of a good oil, but the best yield was obtained from a wood of a moderate or average price.

The color of the first and main distillates varied from a yellowish white to a pale-yellow, with two exceptions, when one yellow and one light amber-colored oil were obtained. The color of the last fractions was usually darker, due probably to prolonged exposure to heat. An oil of a dark-yellow or orange-red color should be rejected, even if it fulfills all the other requirements.

The main distillates gave an agreeable sandalwood odor, while that of the first distillate was somewhat terebinthinate, and that of the last distillate had usually a slightly empyreumatic odor.

Before we give the results of the present investigations a few words may be said about the chemistry of the oil. Santal oil consists chiefly of two sesquiterpene alcohols, α-santalol and β-santalol. The former, $C_{15}H_{24}O$, forms a thick, colorless liquid, with a sp. gr. of 0.977 at 15° C., slightly dextrogyrate and boiling at 301–302° C. The latter, possessing the same formula, turns the plane of polarized light about 45° to the left, and boils at 308–310° C. The α-santalol, which is also the more thoroughly investigated constituent, is predominant in the oil. In addition to these, santal oil contains two sesquiterpenes with the formula $C_{15}H_{24}$, α- and β-santalene, two acids, teresantalic acid and santalic acid, a hydrocarbon, one aldehyde, one ketone, and several other as yet not perfectly identified substances.

Siedler* reports several clinical experiments made with the different brands of santal oil and allied oils, and states that cheap brands of the oil produce very painful affections of the kidneys. He therefore recommends to replace santal oil by santalol, this being a uniform preparation.

Schimmel & Co.† warn against this proposition, "as the composition of santolol has not yet been sufficiently cleared up to ensure always a product of equal value."

They also consider the substitution of santalol in place of sandalwood oil unnecessary, for the reason that the latter consists chiefly of santalol, and good sandalwood oils produce as little disagreeable secondary actions as santalol.

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* P. Seidler, Apotheker Zeitung, 1904, No. 80.

† Semi-annual Report, April–May, 1905.

SPECIFIC GRAVITY.

The U. S. P. (VIII) gives the sp, gr. as 0.965–0.975 at 25° C.

Schimmel & Co.* claim that the upper limit is given too low, and should be 0.980.

The first and main distillates of the various oils we distilled had a sp. gr. within the limits of the U. S. P. with a few exceptions; the last distillates showed an even higher sp. gr. than that proposed by Schimmel. In view of these experiments we wish to favor the sp. gr. as proposed by Schimmel & Co.

Too high a sp. gr. would easily admit old resinified or improperly prepared superheated oil.

SOLUBILITY IN 70 PER CENT. ALCOHOL.

Although the U. S. P. does not prescribe a certain temperature for the test, the experiments were carried out at 25° C. The results show that all the main distillates were perfectly soluble in less than four volumes of 70 per cent. alcohol, but that about 50 per cent. of the first distillates, and about as many of the last distillates, were insoluble in the menstruum. The requirements of the U. S. P. can be fulfilled easily, therefore, by an average oil, and they exclude impure oils as well as the first and last distillates of practically all santal oils.

DETERMINATION OF SANTALOL.

The experiments were carried out by boiling the sandalwood oil with acetic anhydride in presence of fused sodium acetate for two hours, etc. The calculation was made according to the new formula for santalol, $C_{15}H_{24}O$, which Schimmel & Co.† found to be most correct. The first distillates show invariably a low percentage of santalol, the two highest results being obtained from a comparatively cheap wood. The main distillates contain a high percentage of the active constituent, much higher than the required amount, and so do the last distillates, with one exception. The percentage of santalol in the last distillate, however, is usually slightly reduced as compared with the main distillate. It has been recommended to shake out the acetylized oil with water saturated with sodium chloride, but comparative results have shown no advantage over the shaking out with plain water. In some instances it required a rather long time to make the two layers separate properly.

OPTICAL ROTATION.

We were induced to undertake these investigations chiefly because of the discrepancies we experienced occasionally in the optical rotations of oils, which we knew to be obtained from genuine and well-known samples of East-Indian sandalwood; incidentally we extended our experiments to cover the most important of the other requirements.

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* Semi-annual Report, April–May, 1906.

† *Loc. cit.*, April–May, 1906.

The U. S. P. requires an optical rotation at 25° C. of —16° to —20° in a 100 Mm. tube; according to Schimmel & Co.,* this is more nearly correct than the requirements of the previous Pharmacopœia, which were —17° to —20°, and were too rigid, and that a rotary power of —17° cannot always be obtained. From about 11 tons of sandalwood, they obtained an oil which diverted the polarized light —16.3°. But even with such a low rotary power as —16°, we found that we were not able to reach this figure in several instances. It may be mentioned here, that the investigations were not carried out at 25° C., but at the temperature of the room, which was generally about 30° C. This higher temperature certainly has some effect on the determination and would, reduced to 25°, increase the same slightly. Of the first distillates only one shows an angle of more than —16°, and two came near to it. Of the main distillates, and that concerns us principally, seven are higher than the requirements, and six are below the same, and only three of the last distillates have a higher angle of rotation than required. As most of these oils possess a relatively high percentage of santalol above the U. S. P. requirement (especially in the main distillates) and since, according to our tabulated results below, the amount of santalol seems to bear absolutely no definite relation to the angle of rotation, it is difficult to explain why the rotary power of the oil should be regarded as a criterion of the quality. Similar relations we find among the results of Siedler,† although he obtains a much higher rotary power for the oils examined by him. Whether or not certain brands of wood contain substances which dextrogyrate, and therefore reduce the laevogyrate power, is an open question. Certain it is that santalol-content is a much more valuable, correct and trustworthy criterion of santal oil than optical rotation.

ACID, ESTER AND SAPONIFICATION NUMBERS.

In addition to the above investigations, we have also determined the acid, ester and saponification numbers of the oils, although we consider them of very little value in providing a genuine santal oil. However, these numbers would determine many adulterations present in an impure oil.

The U. S. P. does not give these numbers: the Austrian Pharmacopœia requires a saponification number of 5–15; to which Schimmel & Co.‡ add, that the number lies between 5 and 20. For the acid number, the latter §

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* *Loc. cit.*, Oct.–Nov., 1905.

† *Loc. cit.*

‡ *Loc. cit.*, April–May, 1906.

§ *Loc. cit.*, April–May, 1905.

claim 0.5–8, and for the ester number 5–12. Siedler * claims for a good santal oil an acid number of 0.28–2.8, a saponification number of 1.68–7.28, and a corresponding ester number. All the oils we have examined show numbers within the required limits, not one exceeding the requirements of the Austrian Pharmacopœia, and agreeing as a whole very well with the figures found by Siedler ; we never found figures nearly as high as Schimmel & Co. admit.

The determination was carried out in the following way. A weighed quantity of the oil was dissolved in neutral alcohol and with the addition of phenolphthalein titrated with $\frac{N}{5}$ alcoholic caustic potash. Then sufficient $\frac{N}{5}$ alcoholic caustic potash was added to make the whole amount 10 Cc., and the mixture boiled on a water-bath for one hour. The excess of alkali was then retitrated with $\frac{N}{5}$ sulphuric acid, etc.

In conclusion, we wish to say that the requirements of a good sandalwood oil should be :

Sp. gr. 0.965–0.980 at 25°,
Percentage of santalol at least 91–92, and
Perfect solubility in at most 5 volumes of 70 per cent. alcohol at 25° C.

As stated before, we consider that the determination of the rotatory power of the oil is of little value in determining the purity and strength of any santal oil, for as we have seen, about 50 per cent. of the santal oils possessing the correct specific gravity, a much better solubility in 70 per cent. alcohol than is required by the U. S. P., a higher pecentage of santalol, and distilled from absolutely genuine East-India sandalwood, showed a lower optical rotation than –16°. The acid, ester and saponification numbers likewise are no criterion for the quality of santal oil.

FIRST DISTILLATE.

	Yield.	Color.	Sp. Gr.	Sol. in 70% Alco.	Santalol.	Opt. Rot.	Acid No.	Saponification No.	Ester No.
I	5.72	Light-orange	.9721	Insol.	82.6	—14.5	4.0	10.4	6.4
II	5.6	Pale-yellow	.9684	5.0	87.8	—15.1	1.66	6.5	4.84
III	6.18	Pale-yellow	.9634	5.5	83.8	—15.5	1.8	6.62	4.82
IV	5.02	Light-amber	.9645	Insol.	81.8	—13.5	1.9	8.4	6.5
V	5.76	Yellowish-white	.9673	4.5	88.0	—17.6	3.6	8.2	4.6
VI		Yellowish-white	.956	Insol.	74.8	—13.5	2.2	5.9	3.7
VII	4.23	Yellow	.965	5.75	86.7	—15.9	1.4	6.1	4.7
VIII	4.98	Pale-yellow	.9659	7.5	86.5	—15.5	2.8	7.44	4.64
IX	6.00	Pale-yellow	.9663	Insol.	82.4	—15.7	3.9	10.0	6.1
X	5.85	Pale-yellow	.9679	5.5	84.0	—15.2	3.9	7.7	3.8
XI	3.95	Pale-yellow	.9727	Insol.	90.4	—12.9	2.9	12.31	9.41
XII	3.96	Pale-yellow	.9707	4.75	90.8	—14.5	3.3	10.0	6.7
XIII	2.26	Pale-yellow	.964	Insol.	79.7	—13.3	6.3	12.5	6.2

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* *Loc. cit.*

MAIN DISTILLATE.

	Color.	Sp. Gr.	Sol. in 70% Alco.	Santalol.	Opt. Rot.	Acid No.	Sponification No.	Ester No.
I	Pale-yellow	.9743	3.0	93.6	—15.6	1.15	5.2	4.05
II	Yellow.	.9752	3.75	90.6	—16.8	1.2	5.6	4.4
III	Yellowish-white	.9717	3.25	97.0	—16.1	1.0	4.25	3.25
IV	Yellowish-white	.9772	3.5	97.0	—15.3	1.3	4.8	3.5
V	Yellowish-white	.974	3.5	97.0	—18.9	1.1	4.3	3.2
VI	Yellowish-white	.9723	3.5	97.6	—17.2	1.3	4.6	3.3
VII	Pale-yellow	.974	3.75	95.7	—15.5	1.05	5.7	4.65
VIII	Yellowish-white	.9733	3.5	94.5	—17.1	1.5	4.4	2.9
IX	Yellowish-white	.9769	3.25	93.1	—15.9	2.5	7.7	5.2
X	Yellowish-white	.9734	4.0	96.1	—17.0	1.65	5.4	3.75
XI	Yellowish-white	.9728	4.0	96.2	—14.9	3.3	6.9	3.6
XII	Yellowish-white	.9756	3.75	95.0	—19.3	3.2	7.5	4.3
XIII	Pale-yellow	.977	3.75	95.0	—14.1	3.05	7.7	4.65

LAST DISTILLATE.

	Color.	Sp. Gr.	Sol. in 70% Alco.	Santalol.	Opt. Rot.	Acid No.	Sponification No.	Ester No.
I	Yellow	.9809	4.25	93.9	—14.2	2.75	9.5	6.75
II	Dark-yellow	.9816	6.5	90.4	—14.2	3.0	10.4	7.4
III	Yellow	.9835	Insol.	96.6	—13.3	3.1	9.5	6.4
IV	Amber	.982	6	97.0	—14.75	2.25	6.3	4.05
V	Yellow	.9786	6.75	94	—16.1	3.3	9.2	5.9
VI	Light-amber	.985	Insol.	94.1	—12.1	3.4	7.9	4.5
VII	Light-amber	.980	4.5	96.5	—16.1	2.9	8.2	5.3
VIII	Yellow	.9783	4.5	93.1	—15.2	2.2	8.1	5.9
IX	Pale-yellow	.9803	4	96.7	—14.9	3.9	8	4.1
X	Yellow	.9836	Insol.	95.1	—15.1	4.1	13.06	8.96
XI	Yellow	.981	4.75	89	—13.5	6	10.4	4.4
XII	Yellow	.980	3.5	96	—20	6.6	11.5	4.9
XIII	Pale-Yellow	.983	Insol.	96		4.7	13.6	8.9

Baltimore, August 22, 1906.

PRELIMINARY PAPER ON THE COLORING MATTER OF CERTAIN GRAPE SKINS AS AN INDICATOR.

BY E. V. HOWELL.

The Scuppernong grape is one of the best known and probably the most widely distributed of the Southern grapes. It does not thrive well north of Virginia. If seeds of the Scuppernong are planted, it reverts to a black grape resembling our Muscadine or Bullace. The skins from grapes grown from Scuppernong seedlings were used. I found that water, ethyl alcohol and methyl alcohol were the best solvents. Numerous experiments were made to separate the coloring matter in the pure state, and thus far I have found no satisfactory method. The coloring matter is not extracted with ether, chloroform, benzin, benzole, acetone, rhigoline, ethyl acetate or amyl alcohol. The concentrated aqueous or alcoholic solutions made by macerating the skins for several days in the respective solvents, gave the following results.

The solution is a brilliant red; with alkalies it gives a green color, restored to the red by acids. If carefully neutralized, a brilliant purple is produced, which responds to acids and alkalies. Test papers made by dipping unsized paper in the acid, alkaline and neutral solutions, gave red, green and purple test papers. These responded to the following tests.

The red paper is changed to green by very dilute solutions of NH_4OH, $NaOH$, KOH and other alkalies, by the alkaloids, strychnine, caffeine, atrophine, morphine, quinine, etc.

The green paper was changed to red by phosphoric, nitric, hydrochloric, sulphuric, telluric, and all the inorganic acids tried; also by tannic, gallic, malic, tartaric, citric, benzoic, salicylic, acetic acids. It was not affected by H_2S or CO_2.

This is presented as a preliminary paper in the hope that some method of obtaining the purified coloring matter may be found. The points of interest suggested are:

1. An indicator of three distinct colors.
2. It responds to organic and inorganic acids.
3. It acts in alcoholic or aqueous solutions.
4. It is not affected by H_2S or CO_2.
5. It is more delicate and gives sharper reactions than red cabbage or Concord and other grapes skins, with which I made comparisons.
6. It is of interest to those studying the ionic theory or the theory of colors, as to wave lengths, etc.
7. The delicacy of the reactions of these solutions of unknown strength and undetermined impurities was considered sufficient to merit further investigation.
8. It may be of some importance in guano analyses, where phenolphthalein is used and gives much trouble.

THE DEVELOPMENT AND STRUCTURE OF THE SEED OF ARGEMONE MEXICANA.

BY J. O. SCHLOTTERBECK AND C. R. ECKLER.

Argemone mexicana, or prickly poppy, is an annual plant which grows about two feet high, and has a stout, thorny stem, sparingly branched. The leaves are alternate, clasping at the base, from four to ten inches long and two to four inches wide. They are glaucous, generally blotched with white, particularly on the under side, and have a wavy or sinuate-lobed margin with thorny teeth. The flowers are yellow, from one to three inches in diameter, sessile to subsessile; sepals six in number, acuminate; stamens many. The capsule is ovate, one to two inches long, crowned with five nearly sessile, radiate stigmas, placenta five-crested, many-ovuled; seeds blackish and finely pitted.

Argemone Mexicana.

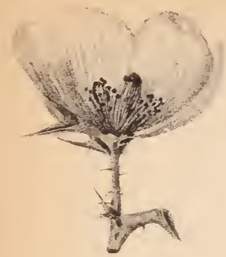

Fig. 1.

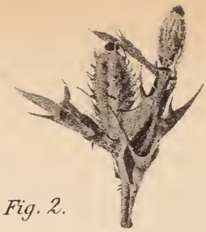

Fig. 2.

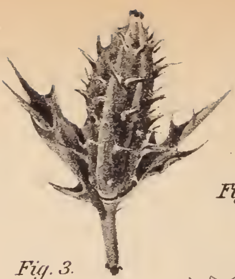

Fig. 3.

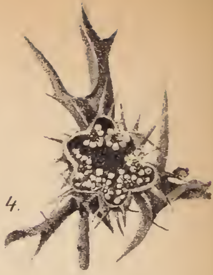

Fig. 4.

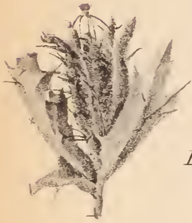

Fig. 5.

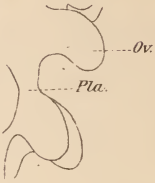

Fig. 6.

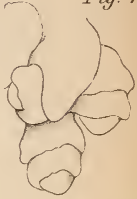

Fig. 7.

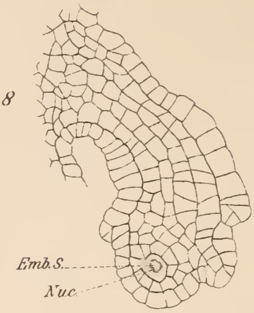

Fig. 8

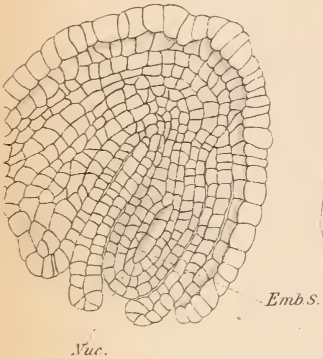

Fig. 9.

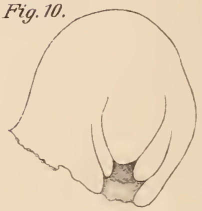

Fig. 10.

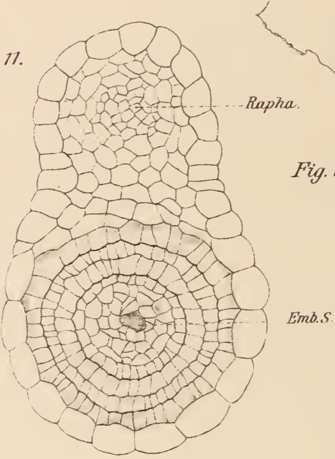

Fig. 11.

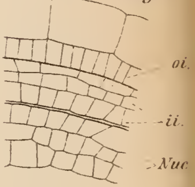

Fig. 12.

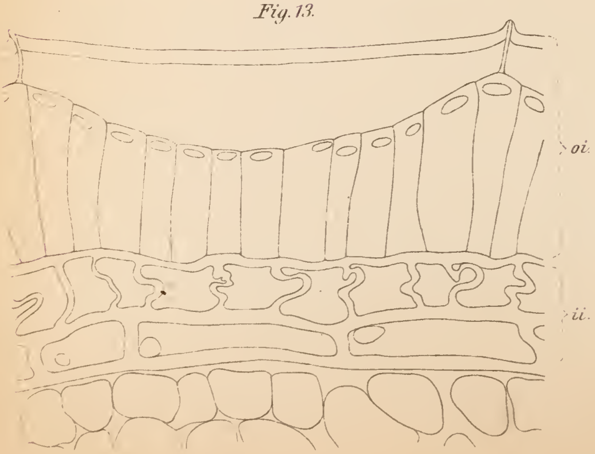

Fig. 13.

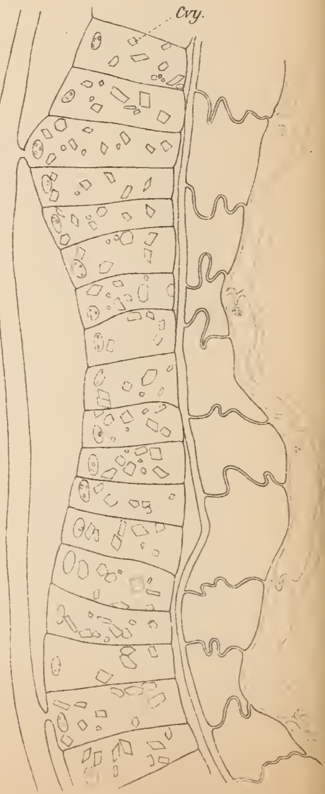

Fig. 14.

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The plant is indigenous to Mexico, Brazil, Africa, South Asia and the West Indies, but has been introduced and naturalized in most tropical and sub-tropical countries. It grows in waste places in New Jersey and Pennsylvania southward to Florida, and in some of the southwestern States. It is said to be a common weed in the tropics and some of the western States. It is of interest to pharmacists and physicians, because until recently it was reputed to contain morphine.

The present study has been confined principally to the development of the seed coat, beginning with the young ovules of the unexpanded flower-buds. A little attention has also been directed to the structure of the root.

The ovules in a surface section of the placenta of the youngest material appear like tears of slightly irregular shape and size, though with some regularity as to arrangement in distinct but somewhat interrupted rows (Fig. 6). The gradual development of the integuments is well shown in the external view of Fig. 7, and in the longitudinal section of Fig. 8. At the same time the outer integument fairly appears (Fig. 7), the ovules become bent, beginning to take on an anatropous form (Fig. 8). The cellular structure at this stage of development is very simple, as seen in Figs. 8 and 9. The embryo sac at this stage consists of a single cell, in which the nucleus was distinctly visible.

A type of the ovules next examined is represented by Fig. 9. The integuments consist of two layers of cells each; the nucellus encloses a three-celled embryo sac. This material was stained with Kleinenburg's hæmatoxylon solution, and all the cells except the epidermal took the stain very nicely. In Fig. 9 it will be noticed that the tip of the nucellus lies about in the plane of the edge of the outer integument, while the inner integument extends quite a little beyond. In all the preceding stages the two integuments have borne about this relation to each other. In the succeeding stages, one of which is represented in Fig. 10, the outer integument is seen to have overtaken the inner one in growth, and continued to develop in this manner until the nucellus and inner integument were entirely enveloped.

In the cross section of a slightly later stage, as shown in Fig. 11, a marked change in the size and form of the epidermal cells of the outer integument is noticeable. They are very much larger than the underlying cells, and they have stretched out, in a tangental direction. The beginning of a raphe development is visible in this same direction.

Ovules of considerable older stage than the one just described show an outer integument of only two rows of cells and an inner integument of three layers. The extreme outer row of the cells show a remarkable increase in size. (Fig. 12.) The layer immediately beneath indicates a tendency to grow in length in a direction at right angles to the long direction of the epidermis.

Fig. 13 is from a nearly full grown but not matured seed. Here the epidermal cells have stretched tangentally to an enormous extent, while the subepidermal cells have extended into a palisade layer, in each cell of which the nucleus is located at the extreme outer end. The number of layers of cells in the inner integument was found to vary in different samples selected, as well as in different parts of the same ovule or seed. This is shown in Figs. 12 and 13. In the latter the walls of the inner integument have become materially thickened, thus offering some mechanical support, though there are evidences that growth and resistance of the palisade layer were causing a collapsing of the subepidermal cells. Between stages represented in 12 and 13, there has been a gradual but practically complete collapse and absorption of the nucellar tissue, as there is no vestige visible in stage shown by Fig. 13. Endosperm tissue has begun to make its appearance in the form of ordinary thin-walled parenchyma.

By examining Fig. 14, which is a section of a full-grown but not ripe seed, it will be seen that in addition to absorption of the nucellus there is also a collapse of the inner integument beginning to take place. A striking feature of this stage is the abundance of crystals of calcium oxalate present in the palisade cells. These result undoubtedly from the excessive metabolism going on to form the very resistant and mechanical palisade cells of the ripened seed. A very dark brown coloring-matter obscured the real structure of these columnar cells to a considerable extent. However, from the study of many seeds from the mature unripe to the ripe it was determined that the tests of the ripe seed consisted practically of the outer integument, whose epidermal layer is very much collapsed and whose palisade layer is composed of cells with walls somewhat thickened and finely reticulated. They are filled with a very dark pigment giving to the seed a black color, and contain crystals of calcium oxalate. The collapsed inner integument, although a part of the testa, takes little part in the protective seed-coat.

A longitudinal section of a ripe seed near the chalaza has the appearance shown in Fig. 15. Here the outer integument is composed of four layers of which the two inner are more or less distinctly reticulated.

Fig. 16 represents the tangental or surface view of the layers of the seed-coat in series. Number 1 is the epidermis, number 2 the palisade layer, number 3 the outer epidermis of the inner integument and number 4 the inner epidermis, the two latter much collapsed.

The ripe seeds are black, with a finely pitted surface as shown in Fig. 20. These pits are oblong, rounded at the ends and sometimes wedge-shaped in outline. They are arranged in rows running from hilum to chalaza. The raphe is very prominent, running nearly the entire length of the seed. (Fig. 21.)

Transverse and longitudinal sections of the ripe seed are shown in Figs.

Fig. 18.

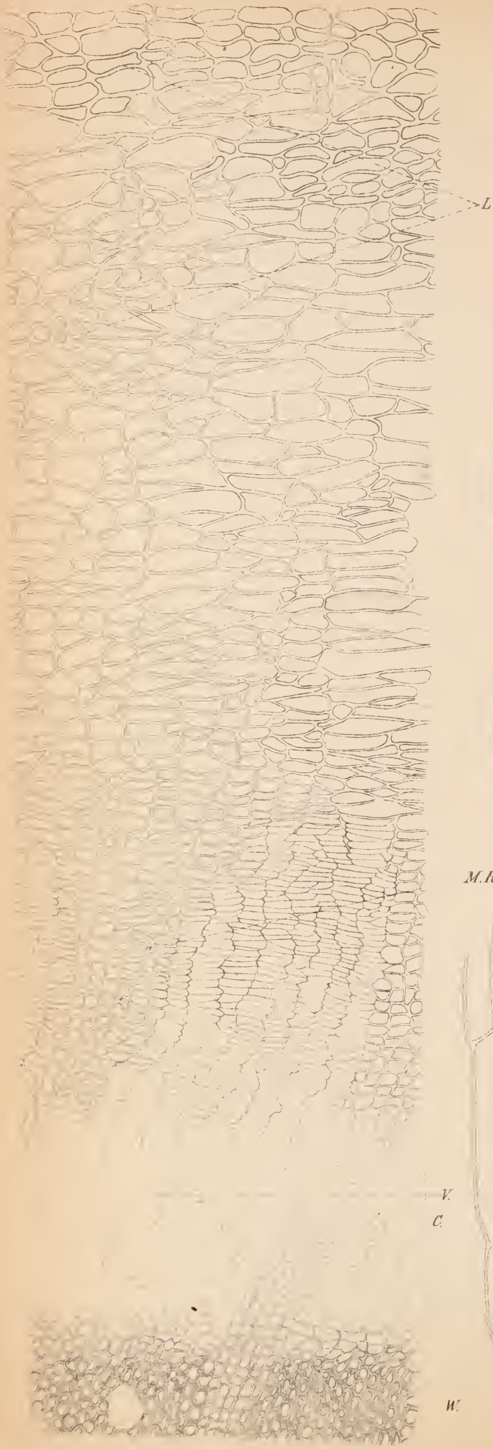

Fig. 15.

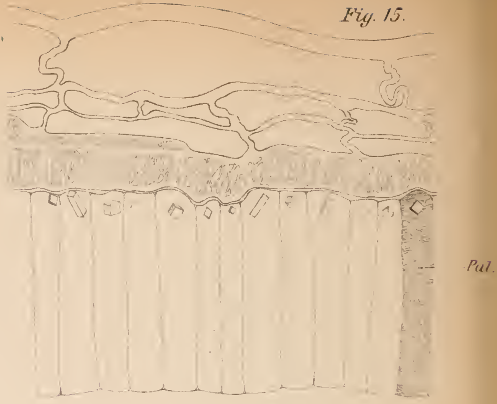

Fig. 20.

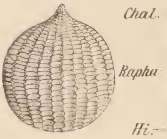

Fig. 22.

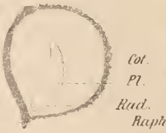

Fig. 23.

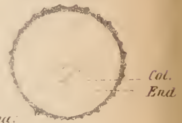

Fig. 21.

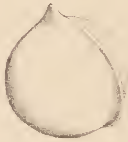

Fig. 16.

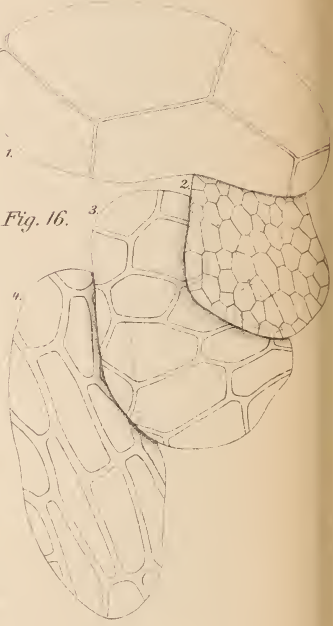

Fig. 19.

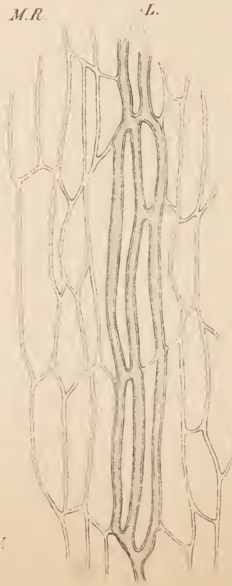

Fig. 17.

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22 and 23, the larger portion of the kernel of the seed being occupied by a rich endosperm enclosing a small embryo.

Argemone, like other plants of this family (papaveraceæ) has a complex latex system in the cortex of the root and stem. The distribution of these latex tubes is best shown in the cross-section of the bark, Fig. 18. The longitudinal view in Fig. 19. These tubes are of a light yellow color and non-septate. It is through this tissue that the yellow milk-juice flows.

A cross-section of the bark is shown in detail in Fig 18, which is self-explanatory.

DESCRIPTION OF PLATES.

1. Flower ⅔ size.
2. Young fruits, natural size.
3. Nearly full-grown fruit.
4. Cross section nearly mature fruit.
5. Dry ripe fruit after dehiscence.
6. Ovules, youngest stage.
7. Ovules, second stage.
8. Longitudinal section ovule, second stage.
9. Longitudinal section ovule, third stage.
10. Longitudinal section ovule, fourth stage, (outline).
11. Cross section ovule, fourth stage.
12. Cross section ovule, fifth stage.
13. Cross section nearly full-sized seed.
14. Cross section nearly full-sized seed. Later stage.
15. Longitudinal section, ripe seed at chalaza.
16. Surface sections of layers of testa or seed-coats.
17. Cross section of root, magnified 10 diameters.
18. Cross section of cortex, through cambium into wood.
19. Latex system of cortex.
20. Mature ripe seed, highly magnified.
21. Outline sketch of ripe seed showing raphe.
22. Longitudinal section through ripe seed.
23. Cross section through ripe seed.

ABBREVIATIONS.

Ep–epidermis. L-latex tubes. M. R.–medullary rays. V–vessels.
C–cambium. W–xylem. Pla-placenta. Ov–ovules. Nuc–nucellus.
Emb. S-embryo-sac. oi–outer integument. ii–inner integument.
Cot-cotyledon. Hi–hilum. Chal-chalaza. Pal–palisade.

MINUTES

OF THE

SECTION ON PRACTICAL PHARMACY AND DISPENSING.

First Session—Thursday Evening, September 6, 1906.

The Section was called to order at 8 o'clock sharp by Chairman W. C. Alpers, who expressed his thanks at the prompt attendance of the members.

Secretary Dunning was asked to take the chair while Mr. Alpers read his address:

CHAIRMAN'S ADDRESS.

A COMPARISON OF FOREIGN AND AMERICAN PHARMACY.

It may be considered one of the most encouraging signs of the vitality of American pharmacy that the Section of Practical Pharmacy and Dispensing, although the youngest among her sisters, attracts the lively and undivided interest of her members. And justly so, for as long as there is life and energy in pharmacy it will evince itself at this place, and our efforts and endeavors will be concentrated in this branch of our manifold occupations. The dispensing-counter differs in many respects from the other parts of our stores and holds a place in our own and the public's minds far aloof form everything else. It is here that the results achieved by our scientific brethren, whose researches and essays often reach above the understanding of the toiling pharmacist, are transmuted into practical deeds; it is here that the connecting link between mere theoretical knowledge and plain commercial shrewdness is woven, and where the thinking pharmacist is daily reminded that he cannot be successful unless he is able to grasp with firmness the two seemingly opposing branches of his vocation. Here also we recognize the international character of pharmacy. Messages in the form of prescriptions reach us that have traveled with our customers from land to land, and bring cheerful greetings from our brethren abroad. This part of our vocation is free from the whims and influences of commercial currents. As business men, in the handling of so many merely commercial developments, we must adjust our efforts to their dictations and patiently endure a shifting of values whenever the laws of demand and supply order us to do so. But at the prescription-counter we are free from such influences. This is a domain that is our own; here we have our destiny in our own hands. We can weigh our professional value, and demand adequate reward for our knowledge and ability.

And thus it has been since pharmacy became a profession and an art; at all times and in all countries we find here the connecting links that bind us together like brethren and make us realize that we are all members of one great family.

In discussing the various aspects of practical pharmrcy and dispensing, reference is often made to, and comparisons drawn with, conditions in foreign countries, sometimes to the advantage and oftener to the disadvantage of American pharmacy.

It occurred to me soon after the last meeting of our Association that it might be of interest to gather direct and truthful information on this subject; and I thought that the assistance of our State Department might be obtained through our consular agents. I therefore sent the following letter to the Secretary of State, the Honorable Elihu Root:

"*December* 4, 1905.

"HON. ELIHU ROOT, *Secretary of State, Washington, D. C.:*

Dear Sir: At the last meeting of the American Pharmaceutical Association the undersigned was elected Chairman of the Section on Practical Pharmacy and Dispensing. For years it has been the desire of the Association to gather facts and statistics from all over the world that might tend to instruct American pharmacists and the public at large on all such matters as pertain to our profession. In order to carry out this work, as far as my Section is concerned, it is my desire to compile statistics in accordance with the questions hereby appended, and I would respectfully ask you whether the assistance of the consuls in the various countries can be obtained to carry out this work. By sending a copy of the questions to the consuls, with the request to submit them for answers to one or more leading pharmacists, an amount of valuable statistics could be obtained that would not only be of interest to our profession, but might also serve to show the way toward improvement and advancement. If it is within the scope of your office to allow and encourage such work, I would respectfully ask you to denote a way and method by which it could be undertaken. All expense that might be incurred in doing so will, of course, be carried by our Association.

"Yours respectfully, "WILLIAM C. ALPERS."

This letter was referred to the Department of Commerce and Labor, and after some more correspondence with Mr. M. Carson, the chief of this department, my request was granted, and the consuls in the various countries instructed to send reports covering the subjects.

QUESTIONS SUBMITTED.

No. 1. How many inhabitants are there in your country to one pharmacy?

No. 2. How many prescriptions does a pharmacy of average size prepare a day?

No. 3. To what extent do pharmacists depend on their prescription business?

No. 4. Do physicians dispense medicine to any extent?

No. 5. Do pharmacists prescribe, and if so, is it done with consent of the law?

No. 6. Do physicians prescribe ready-made prescriptions or patented medicines? If so, to what extent?

No. 7. Is it customary to renew a prescription and give a copy of it, or must the physician's consent be obtained?

No. 8. Do you receive many prescriptions written in other countries?

No. 9. Do you consult the Pharmacopœia of the country from which the prescription comes?

No. 10. Is it customary in your country to buy pharmaceutical preparations, as tinctures, ointments, extracts, etc., from manufacturers, or do you prepare them yourselves.

No. 11. Have you any difficulty in procuring good clerks?

No. 12. What salaries are paid drug clerks, and how long are they on duty?

No. 13. How many hours are the pharmacies open per day?

No. 14. What educational test is given the prospective pharmaceutical student?

No. 15. How many years must a pharmaceutical student study before he is admitted to final examination?

No. 16. Is practical experience required before the final examination, and how much?

No. 17. What is the standing of the pharmacist in your country, profossionally and socially?

No. 18, Is the relation between physicians and pharmacists a friendly one?

No. 19. Is the supervision of pharmacies by the government only nominal, or do inspections actually take place?

No. 20. Can a pharmacist's license be revoked, and for what reasons?

No. 21. Do the pharmaceutical boards (for examination and supervision) consist of pharmacists, or of other persons?

No. 22. How are the boards appointed?

No. 23. How often is a new revision of your Pharmacopœia prepared, and by whom?

Since then I have received from time to time copies of the reports of the consuls in the following places:

Europe: Paris, France; Rome, Italy; Madrid, Spain; Lisbon, Portugal; Athens, Greece; Constantinople, Turkey; Berne, Switzerland; Christiania, Norway; London, England; Dublin, Ireland; and St. Petersburg, Russia.

America: Mexico, Mexico; Havana, Cuba; Santiago, Chile; and Callao, Peru.

Africa: Tangier, Morocco.

Asia: Calcutta, India.

Australia: Sydney, N. S. W.

It will be seen that there are eleven reports from Europe, two from North and Central America, two from South America, one from Asia, and one from Australia. I regret that none of the consuls accredited to German cities replied, nor have we any reports from China and Japan, which at the present time might have been of particular interest.

As the various reports of the consuls are contained in these documents, it is not necessary to read them in toto, and I therefore affix them to this paper and leave it to the Committee of Publication to decide whether or not they are to be printed. The essential parts of these reports I have tabulated on a larger sheet, which I submit herewith, giving the name of the country at the left side and the questions at the head, so that the answer to each question appears in a perpendicular column.

Statistics are always interesting, but they are of but little use unless we can draw inferences from them for our instruction and benefit. As to the reliability of the data, there is no doubt that, with the exception of one or two, our representatives in foreign countries have exercised the greatest care and consulted the governments and scientific societies of the various places, sometimes giving the source of their information. Only in one case the work bears the sign of superficiality, and in one case a question seems to have been misunderstood. I take occasion at this point to express the thanks of the American Pharmaceutical Association, as well as my personal thanks, to the officials who so kindly assisted me in obtaining this valuable information; primarily to Mr. Elihu Root, our esteemed Secretary of State, and Mr. M. Carson, the Chief of the Department of Commerce and Labor, as well as to the eighteen consuls whose reports are before us.

	No. 1 No. of Inhabitants to each Pharmacy	No. 2 Average No. of Prescriptions	No. 3 Extent of Dependence on Prescription Business	No. 4 Do Physicians Dispense?	No. 5 Do Pharmacists Prescribe?	No. 6 Do Physicians Prescribe Ready-made Articles?	No. 7 Renewal of Prescriptions?	No. 8 Foreign Prescriptions?	No. 9 Use of Foreign Pharmacopœia	No. 10 Do Druggists Buy Pharmaceuticals or do they Make Them?	No. 11 Difficulty in Finding Good Clerks?
Paris, France	City, 1,564 Country, 4,000	25	To a large extent	Prohibited by law	Prohibited	Largely; of French make	Yes	City, many, Country, little	Yes	Yes	Yes
Rome, Italy	City, 2,000 Country, 4,500	20–50	50 per cent.	No	Prohibited	Tendency growing	Yes, returned	Many	Yes	Partly	Yes
Madrid, Spain	3,270	25	Largely	No	Prohibited	Yes; always of Spanish make	Yes	Many French	Yes	Little made locally	Yes, mostly Med. Students
Lisbon, Portugal	3,000	City, 100 Country, 25	Largely	Prohibited by law	Prohibited	Yes; chiefly French	Yes, though prohibited by law	Little	Yes	Yes	No
Athens, Greece	2,000	City, 70 Country, 15	80 per cent.	No	No	Yes	Yes	Yes	Yes	Yes	Abundant
Constantinople, Turkey	City, 2,500 No data for country	City, 120 Country, no data	City, largely, Country, no data	Prohibited by law, but done by quacks	Prohibited	Yes	Yes	Yes	French Codex is generally used	Nearly everything imported	Yes
Berne, Switzerland	6,000	30	40 per cent.	No; varies in different cantons	Prohibited	Some	Yes	Yes	Yes	Varied	Yes, formerly German Students not allowed
Christiania, Norway	16,000	City, 100 Country, 10–20	66⅔ per cent.	Prohibited by law	Prohibited	Very limited	Yes, patient's property	Some	Yes	At home	No
London, England	No data	20	25 per cent.	Yes	Prohibited	25 per cent.	Yes	Yes	Yes	Bought	Yes

	No. 12 Salary. Hours on Duty?	No. 13 Length of Business Day	No. 14 Educational Test Before Entering Pharmaceutical School	No. 15 Years of Study in Pharm. School	No. 16 How Long Practical Experience?	No. 17 Standing? Professionally and Socially	No. 18 Relation of Physician and Pharmacist	No. 19 Supervision and Inspection of Pharmacies?	No. 20 Can the License be Revoked?	No. 21 Do Boards Consist of Pharmacists?	No. 22 By Whom Are Boards Appointed?	No. 23 Revision of Pharmacopœia? By Whom?
Paris, France	$30 per month 60 the limit	7–10	Bachelor of Arts	2 years	3 years	Exceptionally good, equal to physician	Harmonious	Yes; once a year. Very strict	Yes	1 Police Officer 2 Professors	Superior School of Medicine	As required Professors (No Pharmacists)
Rome, Italy	30–50 12–16 hr.	15 hr.	Lyceum Matriculation	3–4 years	1 year	Good	Good	Occasionally	No	Professors	Minister of Public Instruction	1892–1902 Board of Health
Madrid, Spain	15–20 and board	Always	Bachelor of Arts	5 years	1 year	High	Cordial	Inspected only when opened	By Court	Inspectors of Pharmacy	Health Council	About 6 years By Health Council
Lisbon, Portugal	18–30 and board 12–16 hr.	16 hr.	Lyceum and Polytechnic	3 years	4 years	Good	Good	Occasionally, nominally	No	2 Physicians 1 Pharmacist	Home Secretary	1860 New one prepared
Athens, Greece	$30 and lodging 15 hr.	16 hr.	Gymnasium	3 years	3 years	According to personal worth	Friendly	Every quarter, strict	Yes; (no one allowed two stores)	1 Pharmacist 1 Physician 1 Police Officer	Government	Every 15 years
Constantinople, Turkey	15–30 15 hr.	16 hr.	French and Turkish languages	3 years	6 years	Not good	Friendly	Twice a year; strict	Yes	Med. Council 3 Pharmacists	Government	French Codex
Berne, Switzerland	25–40 12 hr.	14 hr.	Bachelor of Arts	2 years	3 years	High plane	Friendly	Often	Yes	Pharmacists and Physicians	Interior Department	Occasionally Physicians and Pharmacists
Christiania, Norway	40–50 11 hr.	16 hr.	High School	2 years	3 years	Very good	Very friendly	Yes; strict	Yes	5 Professors 1 Pharmacist	Medical Board permanent	20 years
London, England	$60 12 hr.	15 hr.	Oxford Senior?	No law	3 years	Professionally good; socially, no standing	Friendly	Yes; for purity	No	Professors of Chemistry	Privy Council	10 years Physicians and Chemists

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Dublin, Ireland	7,300	City, 100 Exceptionally, Country, 10	15 per cent. Prescriptions don't pay	Yes, though unethical	Prohibited	Yes	Yes, no copies	Few	Yes	Bought	Yes
St. Petersburg, Russia	10,000	City, 75 Country, 20	Little	No	Prohibited	Little	Yes, returned	Some	Yes	Practice varies	Yes
Mexico, Mexico	2,000	City, 75 Country, 25	Almost entirely	Little	Allowed but little	Yes; principally French	Yes	Some	Yes	Practice varies	No
Havana, Cuba	1,000	Less than in the U. S.	Little	Little	Prohibited	Yes	Yes, returned	Some	Yes	At home	Yes
Santiago, Chile	4,000	30	40 per cent.	Prohibited by law	Prohibited	Little	Yes, returned	Must be indorsed by Chilean physician	No	Bought	No
Callao, Peru	2,700	No data	Little	No	No	Yes	Yes	Few	French Codex used	Imported from U. S.	Fairly
Tangier, Morocco	No data possible. No laws nor regulations. Pharmacists are foreigners living in respective colonies				Native quacks without education prescribe domestic remedies and charms					NO DATA AVAILABLE	
Calcutta, India	No data	No data	No data	No	No	Yes	Yes	Many	Yes	At home	No
Sydney, Australia	5,000	6	Little	Yes	Yes (allowed)	Largely	Yes	Yes	Yes	Bought	Yes

	No. 12 Salary. Hours on Duty?	No. 13 Length of Business Day	No. 14 Educational Test Before Entering Pharmaceutical School	No. 15 Years of Study in Pharm. School	No. 16 How Long Practical Experience?	No. 17 Standing? Professionally and Socially	No. 18 Relation of Physician and Pharmacist	No. 19 Supervision and Inspection of Pharmacies?	No. 20 Can the License be Revoked?	No. 21 Do Boards Consist of Pharmacists?	No. 22 By Whom Are Boards Appointed?	No. 23 Revision of Pharmacopœia? By Whom?
Dublin, Ireland	40–50 9 hr.	12 hr.	High School	No law	4 years	None	Professionally friendly; socially, sharp lines	Nominal	Yes	Pharmaceutical Society of Ireland	Chemists	Physicians and Pharmacists
St. Petersburg, Russia	40–100 8 hr.	16 hr.	College	3 years	3 years	Not high	Friendly	Yes; strict	Yes	Professors for examination, Pharmacists for supervision	Grand Medical Board	Not regular
Mexico, Mexico	50 15 hr.	14 hr.	Government Examination	6 years	None	Whatever he makes it	Friendly	Occasionally	Yes	Board of Health Pharmacists	Superior Board of Health	Irregular Board of Health
Havana, Cuba	50–100 12 hr.	16 hr.	High School	4 years	3 years	Like professional men	Friendly	Nominal	No	Pharmacists	Professors	No Cuban U. S. Pharm. generally used
Santiago, Chile	Good Salaries	15 hr.	High School	4 years	None	Good	Friendly	Nominal	No	Pharmacist and Physicians	University	No Chilian French Codex
Callao, Peru	100 limit 10 hr.	15 hr.	Bachelor of Arts	4 years	2 years	Like professional men	Friendly	Once a year by permanent board; strict	Yes	Professor and Pharmacist	University	French Codex
Tangier, Morocco	NO DATA AVAILABLE							None				
Calcutta, India	100 and up 8 hr. and ev. 3d night	Always	High School	No law	Yes	None	Friendly	Nominal	No	Physicians	Government	British Pharmacopœia
Sydney, Australia	50–60 60 hr. pr. wk.	15 hr.	Latin English	3 years	3 years	None at all	Friendly	Nominal	Yes	Mixed	Government and Pharmaceutical Associations	British Pharmacopœia

Looking over the answers contained in these reports, we can draw at once the following conclusions:

No. 1. There is no country where the number of pharmacies in proportion to the population is as large as in the United States. Norway, with 16,000 inhabitants to one store, and Russia, with 10,000 stand at the head. The average proportion in other countries is about 2,500 to each store. It must be added that in a number of countries there is a distinction between a pharmacy and a drug store, the former representing the professional side, the latter the commercial, as the "Apotheken" and "Droguerien" in Germany. The answers in this schedule refer to the professional pharmacies alone.

No. 2. The number of prescriptions prepared in each store is not larger than with us: even in the seemingly privileged countries the difference is not very great, from which fact we must infer that the people there either resort to home remedies for the cure of most ailments or are generally healthier than we are. This fact also accounts for the small number of pharmacies.

No. 3. As might be expected, the professional pharmacies depend largely on prescriptions for their income, while in countries where a drug store takes the semblance of a department store, as with us, the prescription represents but a small porportion of the income.

No. 4. Dispensing by physicians, except in emergency cases or in the remote country districts, is prohibited by law in 5 of the 18 countries; but even in the others, except in the English-speaking countries, it is not done and is considered unethical.

No. 5. Prescribing by pharmacists is prohibited by law in nearly every country, and this uniformity may be well considered as a proof of the justice of such law.

No. 6. The prescribing of ready-made preparations is in inverse proportion to the educational requirements of the pharmacists, but there is evidently a tendency to increase it. In a number of countries only such preparations are allowed to be sold and dispensed as are manufactured at home.

No. 7. In all countries, except Portugal, the renewal and copying of prescriptions is the custom, and even the report from Lisbon reads: "Although prohibited by law, it is generally done." Nearly everywhere the remark is made that the prescription is considered the property of the patient and is returned to him.

Nos. 8 and 9. Questions 8 and 9, about foreign prescriptions, are naturally answered in the affirmative, although in one country, in Chile, a foreign prescription must be indorsed by a Chilean practitioner before it can be prepared.

No. 10. In all countries where the ethical spirit and professional standing of the pharmacists are high, the preparation of most pharmaceuticals is done locally, but here also there prevails the tendency to depend more and more on the large manufacturers. Some countries exclude foreign products by law.

No. 11. In procuring good clerks our foreign brethren seem to have the same difficulties that we have. Ten reports answer in the affimative and eight in the negative, but these eight represent comparatively small countries, as Norway, Greece, Chile, etc.

No. 12. The salary of a drug clerk exceeds only in exceptional cases the sum of $50 a month; generally it is much less, but often lodging and boarding is included. The hours of duty are generally from 10 to 12 a day, Russia being the only exception where eight hours are the limit.

No. 13. The pharmacies are generally open, as here, from 8 a. m. to 11 p. m.; in large cities some of them all night.

Nos. 14 to 17. The preliminary educational requirements for a student of pharmacy are considerably higher in all other countries than in 'the English-speaking countries. Nowhere in the former is the standard less than a high-school graduation, and in a number of countries a candidate must be a bachelor of arts before he is admitted to the university or pharmaceutical school. The course in the latter ranges from two to four years.

Practical experience before final examination is required everywhere except in Mexico and Chile. The professional and social standing of the pharmacist is naturally in close relation to the educational requirements. Nearly every report from countries where high school and university education is demanded speaks of the pharmacist's standing as very good, very high, equal to that of all other professional men, while reports from India, Australia, England and Ireland mention his social standing as none, none at all, no standing. The Dublin reports mention his standing as much lower than that of professional men, but a little higher than shopkeepers.

No. 18. The relation of pharmacist and physician is friendly the world over.

No. 19. The supervision and inspection of pharmacies is strict in all countries where ethics and education are valued highly, but more or less nominal in the English-speaking countries.

No. 20. It appears that the pharmacist's license can be revoked in nearly every country for reasons similar to those in the United States, as gross negligence, moral turpitude, drunkenness, etc. In a few countries, however, as Italy, Portugal, Chile and India, no provision for revoking a license is made.

Nos. 21 and 22. The answers to the questions relating to boards of pharmacy are not entirely satisfactory, probably because in some countries such appointed boards do not exist at all, or are called by different names and form committees of national boards of health. But so much can be said, that the pharmacists themselves have but scant, if any, representatives in such bodies, while physicians and professors, sometimes also police officials, are mostly represented. Nearly everywhere these are appointed by some branch of the government, in some instances permanently.

No. 23. In the same way the revision of the Pharmacopœia is generally conducted by professors of universities and physicians, pharmacists being but rarely represented.

If, as a result of these answers, we try to draw a comparison between American and foreign pharmacy, we see at once that in one respect we march at present nearly at the end of the profession, that is, in respect to education. At this one point our European brethren are our superiors. But this should surprise or discourage no one. In a young country like ours the necessity of the first century was to make use of every available force, to put handicraft as well as brains to work wherever opportunity and urgency required help, and to leave the minuter classification and arrangement of all available power and talent to a later age of quiet development. European countries have gone through this same evolution.

Nor are we blind to our failing in this respect. Every year new steps for betterment in this direction are made, and if we go slowly it may be said that a considerate—not obstinate—conservatism with gradual improvement is preferable to a sudden revolution without proper preparation.

Putting this educational question aside, the comparison between American and foreign pharmacy is in every other respect favorable to ours. The working hours abroad are as long, and often longer, than here, and the salary always smaller, even if the greater purchasing power of money abroad is taken into consideration. While the number of pharmacies is smaller, their business capacity does not give their owners better returns, and in a number of countries regret is expressed that the professional pharmacists have allowed the drug stores to form a separate class, depriving them of a great deal of business and profit.

In the matter of pharmaceutical legislation we certainly stand at the head. We influence, and in many states control it, and have the power to shape our own destiny. Nearly everywhere in Europe the government supervises and tutors the pharmacists, and there seems to be a distinct desire to keep the science of pharmacy on as low a level as possible.

Revision of the pharmacopœias is often in the hands of men who never rolled a pill or folded a powder, and a comparison of the pharmacopœias of the various countries with ours will convince the most skeptical of the superiority of our methods. The plainest example of this fact is found in France. While the individual pharmacist there stands at the head of our craft, their Pharmacopœia is edited by dry professors with seemingly prehistoric views, so that it appears more like a remnant of medieval mysticism than the result of modern science and research.

Let us therefore rejoice that we are American pharmacists; that we possess not only politically, but also pharmaceutically, freedom of thought, freedom of action, freedom of development. And while here and there the burden of free competition may rest heavily on our shoulders, it yet brings forth renewed energy and calls loudly for the best efforts and the best talent in our ranks.

At the close I wish to express my sincerest thanks to my associates for their splendid assistance in the work of the Section, and especially to H. Brown Dunning, of Baltimore, who prepared the material of an important part of our program, which will be put before you later.

The Chairman's address was an unusally able paper, and was vigorously applauded.

On motion it was ordered received and referred for publication.

On motion of Mr. Mayo, the thanks of the Section were extended to the Secretary of State of the United States, and to the Secretary of the Department of Commerce and Labor for their co-operation and assistance in securing the statistical matter as to the status of pharmacy in foreign lands as set forth in the report.

Mr. Alpers resumed the chair, and called for the reading of papers as the next order of business, and asked Mr. Wilbert to present a paper on the Laudanum of Sydenham, which he had prepared. Mr. Wilbert presented his subject as follows:

SYDENHAM'S LAUDANUM.

BY M. I. WILBERT.

Apothecary at the German Hospital, Philadelphia, Pa.

Among the more widely-known galenical preparations, that were originated in England, few indeed have had a more interesting history, few are more widely used and perhaps none are so thoroughly well forgotten, in the country of their origin, as the liquid laudanum proposed by the immortal Sydenham, in the volume on Medical Observations, nearly 250 years ago.

Despite the fact that Sydenham is usually accredited as having been the father of the modern, experimental school of medicine, many of his theories and practices have been largely lost sight of in English-speaking countries, while his memory is comparatively well conserved in the medical practices on the continent of Europe.

This fact is particularly well illustrated by the widely-used preparation of opium usually known by his name. On the continent of Europe this preparation is variously known as "*Tinctura Opii Crocata*, *Laudanum Sydenhami*, *Laudanum Liquidum Sydenhami*, *Tinctura Meconii Crocata* and *Tinctura Thebaica Crocata.*" With the single exception of selecting a more suitable menstruum for the preparation, as used on the continent of Europe, the active constituents are practically the same as those proposed by Sydenham himself, and this would suggest that its popularity abroad might well be used as an argument for introducing, or, perhaps more correctly, reintroducing the preparation to the attention of American physicians.

It is true that in our own U. S. P. we have retained a semblance of the original preparation that is occasionally, though incorrectly called Sydenham's Laudanum. This preparation, the wine of opium, is not alone a thoroughly unsatisfactory preparation, from a pharmaceutical point of view, but is also in direct violation of article II, of the final recommendations agreed to by the International Conference for the Unification of the Formulæ of Patent Medicaments, which was held at Brussels, Belgium, September 15–20, 1902.

The formula for liquid laudanum, as proposed by Sydenham, contained opium, saffron, cinnamon, cloves and sherry wine. These several ingredients were to be infused together in a warm bath, for 2 or 3 days, till the tincture became of a due consistence when, after straining, it was to be set by for use.

In the several Pharmacopœias, formerly published in Great Britain, the saffron appears to have been omitted at quite an early date, even before the beginning of the nineteenth century, and all of the formulæ for wine of opium that have been included in the Pharmacopœia of the United States, have been based on these later, British, formulæ.

Without going into an extended discussion on the value or the uses of saffron, as a corrective of opium, it may be permissible to point out that in those countries where the saffron has been retained in the formula, Sydenham's laudanum is to-day a popular and frequently used preparation, while in countries where the saffron has been omitted the corresponding preparation is all but forgotten. In our own country wine of opium is now but seldom used, and in England it has been entirely omitted from the most recent edition of the British Pharmacopœia.

It may be proper to add that saffron may rightfully be classed among the most ancient, and, historically at least, among the most interesting of our present day medicaments. It was well known to the ancient Egyptians and was used by them as a perfume and a condiment as well as a medicine. The Jews probably learned of its use while in Egypt and its popularity among them is attested to in the songs of Solomon.

Saffron was held in high esteem by the Greeks and the Romans, but appears to have fallen into disuse in Europe during the earlier centuries of the Christian Era, and was reintroduced by the Arabians.

Saffron is generally regarded as having aromatic, anodyne and antispasmodic properties and has been said to be particularly useful as a corrective of the nauseating and depressing action of opium.

Sydenham's laudanum, as used on the continent of Europe, now represents 10 per cent. of powdered opium and approximately 3 per cent. of saffron and 1 per cent. each of cinnamon and cloves, in a menstruum containing 35 per cent. of alcohol. A preparation of this kind is dark yellowish-red in color and smells of saffron, it has a bitter but distinctly aromatic taste and is quite devoid of the characteristic odor and taste of opium. It is said to be particularly well tolerated even by patients who have evinced an idiosyncracy for other preparations of opium. Pharmaceutically this preparation may be made to be above reproach, as the several drugs can be exhausted separately so as to obviate the more objectionable feature, continued precipitation of the present official wine of opium.

Among the reasons why it would well be worth while interesting American physicians in this time-honored preparation I may recount:

1. It would call attention to the fact that pharmacists are actively interested in what is being done, in the pharmaceutical line, in other countries.

2. It would lead physicians to appreciate the need for greater uniformity particularly in the composition of the more active preparations.

3. It would aid in eliminating from our Pharmacopœia the formulæ for wines of potent medicaments.

4. It would be a step in the direction of bringing about international uniformity of the formulæ of potent medicaments, and last, but by no means least, it would tend to have a beneficent and broadening influence on pharmacists themselves by awakening them to a realization of their duty as instructors of the medical profession in all that pertains to pharmacy and pharmaceutical preparations.

Mr. Hallberg moved to receive and refer for publication.

The paper revived with Mr. Weinstein, of New York, some recollections of his earlier days, in the old country, where this preparation of opium was used in preference to the ordinary tincture of opium. He used to make it three or four times a year, by the Pharmacopœial method, and it never precipitated.

Mr. Whelpley stated that at one time in Europe saffron was so highly prized that the death-penalty was inflicted on those guilty of adulterating the medicine.

This reminded Mr. Hallberg of an incident of the time of the Spanish war, to illustrate the fact that it was "too bad" that the penalty claimed by the last speaker to have existed at one time in Europe was not visited upon the "distinguished alchemist of St. Louis," who had made the somewhat astonishing statement that the war would not at all interfere with the drug market in this country, as there was no drug that could not be produced in America as well as in Spain or any other part of Europe, and when asked about saffron, declared that a better article of saffron could be produced in this country than could be had in Spain—a superior article, and much cheaper! (Laughter.) Mr. Hallberg asked permission to distribute among the members a 44-page pamphlet entitled, "A Symposium on Nostrums," read before the Chicago Medica lSociety, which he said had a direct bearing on the suggestions made in the paper about the desirability of acquainting pharmacists with what is being done along these lines.

Mr. Eliel referred to the fact that they had had several physicians in his section (northern Indiana) who frequently prescribed tinctura opii crocata, and he used the formula of the German Pharmacopœia in preparing it, as it was not in the U. S. P. He was in accord with the views of Mr. Wilbert on this subject, and thought Sydenham's laudanum should be reintroduced into the United States Pharmacopœia.

Mr. Lemberger related, as showing how the traditions of the forefathers go along with a people into strange lands sometimes, how the German population in his part of Pennsylvania, descendants of the original Germans who came to this country, have been accustomed to bring old family receipts or recipes, handed down from one generation to another, into his store, some of them calling for preparations similar to Sydenham's laudanum; and Mr. Eliel's allusion to the formula of the German Pharmacopœia perhaps accounted for their origin. They always insist on these old receipts being returned, and they call for such things as opium, agaric, gentian, zedoary, saffron and whiskey. He described how the old grandmothers of the community raised genuine saffron in their gardens and gather the flowers in the fall, with the coming of frost, and dry and preserve them. They use it in measles, scarlet fever and the like, and also use it for coloring in soups and other food articles.

The Chair said the paper would be received and referred.

Mr. H. A. B. Dunning was called on to present a paper on laboratory notes. He first passed around among the members, as an object-lesson on his paper, some gelatin- and keratin-coated pills, and then presented his paper.

LABORATORY NOTES.

BY H. A. B. DUNNING.

Having but little time this year to do any special work for the Section, I have endeavored to gather notes of practical interest from the prescription department and manufacturing laboratory.

The writer has heard of many methods for sealing hard capsules, has tried them all and had his assistants do the same, but has had success with only one.

While there is no claim for originality in the following method, there are some points which are perhaps new.

A heavy solution of gelatin is prepared by heating the tops of soluble elastic capsules in a porcelain dish on a water-bath with sufficient water to make a solution, which, when hot, drops freely from the end of a glass rod.

The gelatin solution may be made in other ways that may perhaps be more convenient to the operator.

A glass rod, with a long, sharp point is used and is dipped into the hot solution of gelatin, while at the same time the filled capsule is held upside down by the cap between the thumb and forefinger.

The point of a glass rod carrying gelatin solution is run around and under edges of the capsules, thus filling the space between the two parts of capsule, and making a thin ring around the body of it.

After much experimenting, I have found that when the cap of a hard capsule is moistened either with water, alcohol and water, or a thin gelatin solution, it spreads outward and away from the body of capsule instead of being glued to it. In my experience hard capsules not sealed with some very adhesive and thick material will leak in course of a short time.

A hard capsule properly filled and sealed makes a better appearance than the much-vaunted soluble elastic capsule and keeps better.

Since the recent meeting of the American Medical Association, we have received quite a number of prescriptions calling for methylene-blue in combination with various drugs more particularly extract of belladonna, but also extract of hyoscyamus, codeine sulphate and some few other drugs.

After putting up these capsules, we were apt to find a streak of methylene-blue stain in any part of the room, and the boxes returned for refilling highly stained.

These difficulties were largely overcome by mixing with each 15 grains of methylene-blue, one drop of white petroleum oil.

It may be an unwise statement for me to make yet I do not believe that the retail pharmacist can satisfactorily make extracts, powdered extracts or even fluidextracts in quantities larger than a few ounces of the extracts or a few pints of the fluidextracts, because a vacuum apparatus is essential.

Overlooking the loss of alkaloids through the long heating necessary for driving off the required amount of moisture at normal pressure, there is yet to be considered the large percentage of insoluble matter produced by the decomposition of organic inactive constituents, which results in extracts which form turbid solutions.

Tolu balsam fuses at a comparatively low temperature without any or at least but little harm to it. Considering the difficulty of dissolving the balsam, at an ordinary temperature, in alcohol, especially when making large quantities of tincture of tolu or compound tincture of benzoin, it is suggested that these preparations be made by first fusing the tolu, and dissolving by adding alcohol while it is still hot and fluid.

The quickest and most satisfactory method of making liniment of soft soap is to heat the soap for some time on a water-bath until it becomes by stirring a homogenous semiliquid rather than a semisolid mass; the flame is then turned off and the hot soap dissolved in the requisite amount of alcohol.

We have had much difficulty in our laboratory when making large quantities of tooth powder, comp. licorice powder and similar mixtures, in getting the ingredients quickly and thoroughly mixed, as the mechanical hand-power mixer has never given us satisfaction.

It occurred to me, after bolting the separate ingredients through a 120 sieve, to mix them thoroughly by running [back and forth through a No. 80 bolting-cloth. This method has proved very satisfactory, because powders which can scarcely be forced through a 40 wire-sieve will run freely through an 80 bolting-cloth.

After making forty odd lots of emulsions of codliver oil, of 2 ounces each, I concluded that emulsions of codliver oil should be made fresh for the following reasons.

These emulsions become acid and finally sour, due to the fermentation of the aqueous solution of acacia and also because codliver oil itself becomes acid after standing in the presence of water, not discussing the rapid fermentation of the sugar usually contained in the emulsions.

The spoiling cannot be prevented by reasonable amounts of alcohol, salicylic acid, lime water, with or without syrup being present, or when made with tragacanth, Irish moss, dextrin, glycerite of yolk of egg, or different combinations of these agents.

An emulsion with tragacanth and saponin was the only white emulsion which did not separate appreciably, after six months standing. It was however acid, saccharin being used as the sweetening agent.

An emulsion made with tragacanth and solution of potassium hydroxide also one with tragacanth and soap, both the soap and potash being in extremely small quantities, resulted in an emulsion which separated but little and did not become acid.

The writer reiterates that all 50 per cent. codliver oil emulsions should be made fresh.

As has often been stated by myself and others, there is nothing equal to filter-paper torn into shreds for making aromatic waters, and paper pulp is of great value as a clarifying agent; also perfectly pure saw dust to mix with cudbear, aloes and other similar drugs which are hard to percolate.

These agents are more or less difficult to obtain pure; therefore I have conceived the idea of powdering pure paper for the purposes above mentioned and I wish to state that in my experience it has proved ideal.

When making aromatic waters, it requires but a few moments' time to drop the respective oil on the powdered paper, stir the mixture around with a glass rod, when all the oil is absorbed, place it in the container and pour the required amount of distilled water over it.

The solution of the oil will filter off perfectly clear and will be found highly flavored.

Besides as a clarifying agent, powdered paper works nicely. It is only necessary to pack a percolator with a layer of the powdered paper an inch or more in height, cover over with a piece of sheet filter-paper and then some glass bottle-tops to weigh it down and pour on the liquid.

For making tincture of cudbear, the bug-a-boo of all druggists, who do not use purified saw dust, the ground drug is mixed with an equal bulk of the powdered paper and percolation goes on nicely. The same procedure may be followed in making tincture of opium.

As the U. S. P. and N. F. preparations are likely to be thoroughly discussed during the session of this Section, only a few preparations will be mentioned in this paper.

Antiseptic Solution, U. S. P., does not in my opinion compare favorably with the proprietary preparations it is supposed to simulate ; one objection is that it smells too strongly of peppermint.

Compound solution of sodium phosphate, as made by myself and several assistants according to U. S. P., deposits crystals on standing, but if the amount of citric acid be increased to 200 Gm. for each 1000 of finished preparation, the solution is permanent. Besides this, the method directed by the Pharmacopœia to triturate the salts until liquified is very tedious. Solution may readily be effected at a low temperature on the water-bath.

According to the experience of myself and others, the formula for effervescing sodium phosphate does not contain sufficient citric acid and the mixture should not be manipulated while fusing, as directed by the U. S. P.

Elixir of glycerophosphates, N. F., is a preparation containing so much phosphoric acid that it is nearly a solution of phosphates containing variable proportions of glycerophosphoric acid according to age.

If one uses the normal calcium and sodium glycerophosphates as prepared by one large manufacturer, the finished preparation will not hold up more than a few hours unless nearly double the amount of phosphoric acid be added, while if the glycerophosphates of another manufacturer, which are acid compounds, be used, a solution results which is permanent for at least a few weeks.

In my mind there is very little more objection to using hydrochloric acid than phosphoric in excess.

Solution of Peptonate of Iron, N. F., has several objectionable features, I think.

It is difficult to obtain peptones at a moderate price free from impurities. It it better to make the peptone fresh by digesting egg-albumen with pepsin, and finally when using the peptonate of iron made from fresh peptone, I and others have been unable to dissolve it by the aid of sodium hydroxide when making a solution of the strength directed by the N. F. formula.

I have prepared a solution with sodium hydroxide by adding an excess directly to a mixture of iron oxychloride solution with an excess of peptone.

Liquor antisepticus alkalinus probably contains too much glycerin and is lacking in strength.

Aromatic liquid pepsin according to my taste is badly flavored.

I would suggest the following process for making tincture of opium, U. S. P.

Mix 100 Gms. of powdered opium with an equal bulk of powdered paper or other suitable agent in proper proportion and percolate with 1000 Cc. of diluted alcohol, collect, percolate and set aside, then exhaust opium with water, requiring about 500 Cc., evaporate the aqueous percolate to a small bulk, mix with an equal quantity of alcohol and, when cool, filter, passing enough diluted alcohol through the filter to make the mixed percolates measure 1000 Cc.

As proved by assay neither the old nor new U. S. P. method for making tincture of opium exhausts the opium completely.

Mr. Eliel thoroughly agreed with the writer in regard to sodium phosphate solution of the U. S. P. He had made this solution a number of times, following the directions of the Pharmacopœia implicity, but had never been able to make one that would hold up. There are a great many solutions of sodium phosphate on the market which did not crystallize out, and he was satisfied they were made very differently from the Pharmacopœia formula, having an excess of phosphoric acid, doubtless. As to the powdered filter-paper referred-to by Mr. Dunning for filtering drugs difficult to percolate, he had been using this method with success for thirty-five years. He described his process for reducing the paper to a powder, which Mr. Dunning thought was rather tedious.

Mr. Jones, of South Dakota, asked Mr. Dunning if he thought the use of salicylic acid referred to in connection with codliver oil emulsions was admissible. Mr. Dunning replied that he was not passing on what was permissible, though he would say that he did not think it permissible, but on the action of these preservatives. Mr. Jones said he did not think the reference should be made to salicylic acid, as it might be misleading in some States where it was not prohibited.

Mr. Hynson remarked, in regard to the matter of powdered paper referred to, that Mr. Dunning was too modest to say that it was his brother who had first used that particular process.

Mr. LaWall of Philadelphia, asked the writer if he thought saccharin, to which he referred as being used in emulsions of codliver oil, should be used without the knowledge of the physician. Mr. Dunning replied that he was not stating that any substance should be used, but only referring to their effects when used.

Mr. Hallberg did not believe saccharin should be used in these emulsions, as recent experiments had demonstrated that it was what is called a "plastic poison," and therefore should be used with great care. He described the process of sealing capsules that had been used very successfully by the students in his college for a number of years. It consisted simply in pressing the cap down for a minute or two on a piece of filter-paper soaked in water, and then sticking them on the capsule filled with oil, being careful not to have any oil on the outside. He said he had appropriated this method of sealing capsules from a gentleman who was at one time an instructor in the Chicago University, Mr. Paul Rudnick, now one of the chemists for the Armours, of Chicago. Out of 250 capsules so treated last spring, not one of them leaked. He thought the method of Mr. Dunning must be exceedingly tedious. He agreed with him, however, in preferring a hard capsule, hermetically sealed, to the soluble elastic capsule.

Mr. Dunning thought the edges of the cap to the capsule thus moistened with water would spread outward in drying, rather than draw into the capsule; but Mr. Hallberg said care must be taken not to leave it on the saturated filter-paper too long.

Mr. Lemberger thought if the cap must be pressed down on the filter-paper for "a minute or two," not much progress could be made. He had used this plan and had never had any trouble, but he had found two seconds sufficiently long to press the cap to the filter-paper. Mr. Hallberg agreed he might be in error as to the time it took.

Mr. Stanislaus said that in the Brooklyn College of Pharmacy they had used the method described by Mr. Hallberg, and that out of a thousand or fifteen hundred capsules so treated they had found very few to leak.

Mr. Hallberg asked the author of the paper if he had tried tartaric acid in his preparations of elixir of glycerophosphates, which was originally highly recommended by Dietrich, and which he had found to work well in his hands. Mr. Dunning replied that his idea was, that the use of either tartaric acid or citric acid in preparations of glycerophosphates was incompatible with calcium salts. He said he had tried lactic acid successfully in such preparations, and published the formula in the Bulletin of Pharmacy last June, and had written a paper on the subject.

The Chair said that with glycerophosphate preparations sterilized water only should be used,—sterilized, say, for half an hour,—as, otherwise, his experience had been that the prescription usually comes back in a very few days, spoiled; whereas, if properly made with sterilized water, it will keep for weeks. He imagined some of the trouble with glycerophosphate preparations was probably due to the none-use of sterilized water. In answer to a question by Mr. Meissner, he said he did not think distilled water would answer.

Referring to the writer's method of making tincture of opium, Mr. Francis Hemm, of St. Louis, spoke of the difficulty of getting the tincture in finished product to conform to the right percentage of morphine, under the Pharmacopœial method, and asked the author how much experimentation he had given the matter, and if he had examined the finished product to find how much it fell short of the required per cent. of morphine.

Mr. Dunning replied that he really had not subjected the new U. S. P. process to the same stringent experimentation as he had the old method, but he did not see much more opportunity to exhaust the opium under the new method than under the the old, since in both the opium is macerated in the same quantity of menstruum, 1,000 cubic centimeters. He thought it would take a very careful operator to get any better results under the new method, as the only practical difference was in treating the opium with hot water. He thought the process he described in his paper much easier and safer. He told of collecting ten samples of tincture of opium, made under the old pharmacopœial method, from as many reputable pharmacists in the city of Baltimore—all of whom declared they had done the most careful work on them—as to which investigation showed widely different results, apparently due in the main to the greater or less care used in extracting the drug. His own proportion was 9 per cent. of opium exhausted—opium, not morphine—while other samples ran as low as 7 and 7½ per cent., and one as low as 6 per cent. He thought every pharmacist would admit that it was a difficult matter to exhaust the full amount of opium with the quantity of menstruum directed by the Pharmacopœia.

Mr. Hemm said the point he wanted to make was, that if it made a material difference in carrying out the U. S. P. method it was time to make the fact known to the pharmacists of the country—especially in view of the new drug law soon to go into effect; as, if even a conscientious carrying-out of the pharmacopœial method will not give the per cent. of morphine required in the finished product, that method will get the pharmacists into trouble, and the formula should be corrected as soon as possible.

The General Secretary remarked that it was a well-known fact with all who had worked with opium, that it was difficult to exhaust it of all its morphine-content, but he thought the evil of insufficient extraction, as pointed out by the author of the paper, was perhaps somewhat overrated, as, even if the opium should not be quite exhausted, while it might prove a financial loss to the operator, it could not possibly interfere with the preparation as a U. S. P. tincture, for the reason that it must be assayed and standardized by reducing or increasing its strength to conform to the requirement of the Pharmacopœia. This is the process of all manufacturers, to exhaust the opium and standardize the product by dilution or evaporation.

Mr. Hynson said that the Committee on Drug Adulteration of the American Pharmaceutical Association had come to the conclusion that the druggists of the country were not dishonest in their methods, but were simply unable to extract the alkaloid to the extent required by the Pharmacopœia.

Mr. Chas. E. Caspari commented upon the difference of opinion manifest upon this question, and said he thought there should be some accord between the Sections on the subject, and he would move to refer to the Scientific Section this question of tincture of opium, and the questions involved therein, for report at the next annual meeting.

Mr. Eliel wanted to add to this the assay methods of the U. S. Pharmacopœia, but the Chairman and Mr. Caspari both thought it would be best not to say anything about assay methods just now. and the matter was not pressed.

Mr. Hemm expressed his agreement with the General Secretary as to the necessity of assaying the tincture after extraction of the morphine-content from the opium, which would result of course in standardizing it; but the point he wanted to get at was, whether the failure to exhaust the morphine-content by the Pharmacopœial methods was material in extent. Mr. Dunning said again that this depended on the care of the operator.

The motion of Mr. C. E. Caspari to refer the motion to the Scientific Section was then put and carried.

The nomination of officers of the Section for the ensuing year was called for as the next order of business, and Mr. Wilbert nominated Mr. H. A. B. Dunning, of Baltimore, for Chairman, and the motion was seconded by Mr. Gross. Mr. Hallberg nominated Mr. Joseph Weinstein, of New York, for Secretary, as the representative of a class of retail druggists whose interest in this work was desired, and as one who had personally taken an interest in the work of the Section. The motion was duly seconded. Mr. Hynson nominated for Associate on the Committee Mr. F. M. Apple, of Philadelphia, and Mr. Gross seconded the nomination.

The Chair announced that, under the agreement made with the local Secretary, Mr. F. H. Carter, the Section would adjourn at 9:30 o'clock, to give the members an opportunity to attend the entertainment at "Fair Bank," and that hour having arrived an adjournment would be taken to 10 o'clock to-morrow (Friday) morning.

Thereupon, the Section stood adjourned to the time indicated.

SECOND SESSION—FRIDAY MORNING, SEPTEMBER 7, 1906.

The second session of the Section on Practical Pharmacy and Dispensing was called to order by Chairman Alpers at 10:15 a. m.

On motion of Mr. Weinstein, the reading of the minutes of the first session was dispensed with.

The Chair called on Mr. Apple, of Philadelphia, to read a paper entitled, "A Square Deal Prescription Blank." Mr. Apple first called attention to the fact that the form of blank on page 3 of his paper did not exactly express what he wished, and said that blank forms such as he desired would be handed around in leaflet form among the members. He then proceeded to read his paper.

A SQUARE DEAL PRESCRIPTION BLANK.

BY FRANKLIN M. APPLE, PH. G.

Let me preface my remarks by quoting the following appropriate sentiments:

> "Great souls in instinct to each other turn,
> Demand alliance, and in friendship burn."
>
> "Pure friendship is something which men of an inferior intellect can never taste."

As medicine and pharmacy are almost invariably referred to and spoken of as sister professions, and pharmacy has been designated as the handmaiden of medicine (being the junior of medicine in point of years), the world naturally expects to see a true friendship existing between the two professions, whose interests are so nearly identical. A spirit of brotherly love should be evident at all times between such closely allied vocations and professions—a far greater one than unfortunately seems to be in evidence in this day and generation.

To promote and guarantee the continuance of such conditions, it is absolutely essential and necessary that the members of the two professions should at all times bear in mind the rights and privileges of the other party to the alliance, and treat with one another in a perfectly honest manner, ever mindful of the verity of the saying of the immortal Pope: "An honest man's the noblest work of God."

In no department of the modern pharmacy should this spirit of amity and good-fellowship be more manifest than in the prescription department, which should represent only true, legitimate, professional pharmacy, the success of which is, in a large measure, dependent upon the confidence the medical men have in the manner in which it is conducted, and the regard shown for their rights therein.

This brings us to the consideration of the prescription, as to what it represents, and the rights pertaining to same.

The prescription is, unquestionably, an order, originated by the medical practitioner in behalf of the patient, for whom he has made a diagnosis at his or her request, to be conveyed by said patient, or his or her representative, to the properly qualified party (the pharmacist) for compounding and dispensing, according to the best known methods of the science of pharmacy; and it is entirely in the province of the medical adviser to dictate the conditions under which he will originate said prescription, and also to limit the use of same as he may deem wise and prudent. It goes without saying that he can legally exercise the right to deny the use of his mental judgment by a party or parties from whom he has not received any remuneration, and, as in many cases, he has never seen.

The indiscriminate renewing of prescriptions has proven, and is still proving, one of the most serious sources of ill-feeling between the sister-professions, resulting in a number of equally pernicious habits or customs, which must be acknowledged by all competent to judge to not be for the best interests of the two professions—and the public, viz.: Tablet dispensing by the M. D.'s, and counter prescribing by the Ph. G.'s.

Having had several years experience in detailing the medical profession for one of the leading proprietary foods, thereby allowing me an insight into the true state of affairs in the medical practitioners' offices, and for the past five years having noticed an ever-increasing tendency on the part of the medical men to request that their prescriptions be not renewed, I commenced to study the subject carefully several years ago, to endeavor to prove the justice of said requests, and the possibilities of pharmacists to comply with same.

To any unbiased mind it becomes apparent that the medical man has the right (morally and in perfect justice to himself and his patient), whenever he thinks his diagnosis indicates the necessity for the writing of a prescription for drugs to assist nature to bring about normal conditions of the body, to define the limitations of said prescription.

It is to be understood definitely that the patient pays the medical practitioner for medical or surgical *skill and knowledge only*, and not for the prescription, as the latter is merely the result of the former.

The subject of renewing of prescriptions is not one of recent origin, for it has proven a source of trouble for many years; and in some countries, *i. e.*, Honduras, it has been deemed of sufficient importance to be controlled by legal rules. In some respects their laws on this subject are to be highly commended, whilst in others, I do not see the wisdom of same, *i. e.*, the returning of the original prescription to the patient, when it can be of no value to him, as it is not to be renewed, unless so directed by the medical man writing same. See Pharm. Era, 12, 28, 1905, and 1, 25, '06, p. 71.

Various forms of verbiage have been, and are in use to indicate the views of the M. D.'s concerning the nonrenewing of their prescriptions. I will quote you a few taken from my ℞ file, viz.: 1. "Not to be renewed." 2. "This prescription not to be refilled unless so ordered." 3. "Note: This prescription is written for the party named above and for this time only. Do not refill without my written order." 4. "Not to be renewed except upon orders in writing." 5. "This prescription must not be renewed unless countersigned by physician giving it, and under renewed date." 6. "This prescription is intended for the present indications only, and is not to be renewed without the written consent of the physician."

In all of these cases will be noticed the disadvantage to which the honest pharmacist is placed, for, if he respects the injunctions, the patient can demand copies of same, and the original prescription, and have same refilled at a store whose proprietor is less honest. Nos. 1 and 2 can be interpreted as an order to the patient and not to the pharmacist. No. 3 was placed at the bottom of the blank so that the patient could cut same off if he chose and no injunction remained. No. 5 is one from the Skin Dept. (out patient dep't) of one of our prominent medical school hospitals. No. 6 is one of my crude devices to endeavor to control the question of renewing, which was found to be unfair and not perfect.

In order to call the attention of the patient and customer to the fact that the prescription was a restricted one, I devised the following sticker, which was and is placed upon all containers for prescriptions having any form of injunction on them :

Your physician directs that this prescription IS NOT TO BE RENEWED without his consent.

Will call your attention to the first three words of same, which places the responsibility where it justly and honestly belongs, and has a wonderful restraining influence over the patients, as many are afraid to have same renewed, knowing their physicians deem it best to not do so.

Realizing the imperfections and injustices to the honest pharmacists of all the aforementioned notices on the medical men's prescriptions, also that the number of medical practitioners who are requesting that their prescriptions be not renewed is constantly growing greater, and in order to place the responsibility for the limitations of the prescription where it honestly and legally belongs, it becomes necessary to devise a plan that would be perfectly equitable to the parties concerned, viz. : the medical practitioner, the pharmacist and the patient.

Inasmuch as due consideration was necessary to be taken of the legal aspect of the case, I decided that the only way to safely and honestly control the question was by devising a modified prescription blank that was a legal contract, the acceptance of which by the patients was bona fide evidence of their knowledge of the conditions pertaining to said contract, to which they acquiesced in accepting same.

The results of repeated experiments with many forms of such prescription blanks has led me to offer the following as the perfect solution of the question of ownership of the prescription ; also as the best way to control the renewing of said prescription.

EDWARD HAENTZE, M. D.,

OFFICE HOURS: { 8 to 10 A. M. / 1 to 3 P .M. / 6 to 8 P. M.
1911 NORTH 31ST STREET,
PHILADELPHIA
Sundays 8 to 10 A. M. only.
Bell Telephone 36-66 D Poplar.

NOTE.—The conditions under which this prescription is written will be found on reverse side hereof.

FOR..

℞

(Reverse.)

This prescription is written for the party whose name appears thereon, for the present indications only; hence it is NOT TO BE RENEWED without my written consent, and NO COPY OF SAME IS TO BE GIVEN.

The Pharmacist compounding it will kindly preserve same on his prescription file.

Date Dr.

Let us carefully analyze this prescription blank and note certain features of same. The verbiage of same is the strongest I found the medical men would accept. The medical man using same can unquestionably control his prescription, but at the same time assumes the responsibility to his patient for the restrictions on same, thereby putting him to an honest test if he wishes his prescriptions to be or not to be renewed. No one can control it for him, as he is the power omnipotent over the prescription, occupying the same position, in law, that the courts have decreed the manufacturer of a patent medicine occupies—is perfect master of the situation.

The physician has the same rights to place restrictions upon his prescription as the owner of a piece of land has when disposing of same. The latter can specify what can and what cannot be done with said property by placing said conditions on the deed, thereby publishing said facts to the world, and the purchaser is obliged to respect said restrictions. The physician can do likewise when diagnosing and prescribing for his patient. It is certainly advisable to publish the conditions under which the patient received the prescription from the medical practitioner, and no safer place can be found than on the prescription blank itself, as is the case in the one offered for your consideration, for it must be remembered that the medical practitioner is the *only* person who can place limitations on his prescription legally. No matter how much a pharmacist may wish to do to control the question for the medical man, it is an utter impossibility for him to do so without running many risks legally.

The location of the injunction clauses was chosen with the idea of protecting same from any possibility of their being detached from the prescription, thereby defeating the wishes of the prescriber. You will notice that the body of the prescription is written over same, so that to remove the restrictions renders the prescription of no value to the patient.

The pharmacist has no alternative than to respect the request or order of the M. D. using this form of prescription blank, properly signed, if he wishes to retain the good-will and support of the M. D. writing the same ; and he is relieved of any necessity for explaining the causes for the limitations placed on same by the prescriber. The patient should be referred to the author-of same for any and all explanations, as the pharmacists are not presumed to know why the M. D. has decided to limit the use of his mental abilities. It might prove very unprofitable for the pharmacist violating the injunction, for, by so doing, he assumes all risks for damage done by said medicine in creating a habit or interfering with more proper treatment; and as he has trespassed upon the property rights of the medical man, he is likewise liable for damages, if the M. D. cares to collect same.

Unquestionably an M. D. could get an injunction against a pharmacist who deliberately and repeatedly trespassed on his rights.

Where does the patient come in, you will ask.

The patient is protected from any and all possibilities of becoming unknowingly and unwittingly addicted to the habitual use of the prescription; is prevented from interfering with the best treatment of his or her ills (and incidentally for those of their friends and neighbors oftentimes), when not qualified to do so, and from dosing himself or herself, when it is to their detriment to do so. Will not this point call your attention to Rule No. 25 of Henry Phipp's Institute for the study, treatment and prevention of tuberculosis: "Don't take any medicine unless it has been prescribed by your physician. Medicine may do you harm as well as good."

Thus you will see that the rights and best interests of the three parties interested have been taken into consideration in the devising of this prescription blank, and there are no possibilities of ill-feeling cropping up between the M. D. and the Ph. G. through ignorance or the exercising of judgment on the part of the Ph. G. as to the veracity of the patient, who states verbally that the M. D. ordered the renewal of his or her prescription. As everything must be committed to writing, it is very easy to trace the guilty party in case of a disturbance or ill-feeling arising. The system is mutually protective to the parties concerned.

It must be borne in mind that a system is not of much value unless it is enforced; also that it is like unto a chain—only as strong as the weakest link composing same.

The use of this system in the past would have obviated a number of legal battles to determine the ownership of the original prescription; also would have prevented the necessity of the Kansas City Medical Association requesting the pharmacists of that city to discontinue the indiscriminate renewing of their prescriptions, which request was ignored with unquestionable loss to the pharmacists, and to the advantage of the manufacturers of tablets and bottled mixtures, ready for dispensing by the M. D. The manufacturers of this class of preparations are the worst enemies the members of our profession have to contend with, as they strike at our very vitals, and do not stop at slander to influence the medical men to dispense and look upon their sister profession as to their natural-born enemies.

To demonstrate the evil results of indiscriminate renewing of prescriptions—with the adoption of tablet dispensing in self-defence as a result—let me narrate the following incident, told me by an intimate friend, who was the original prescriber: A regular prescription was written for a legitimate emmenagogue pill for legitimate purposes, with favorable results. This was several years ago. Recently the M. D. was in the store where it was filled, and noticed that the lady was having same renewed. Upon interrogating her he found that she was having them renewed repeatedly, paying 40 cents for same; and after placing same in plain boxes, was selling them to her friends for $2.00 per box. He had given her the means to carry on this traffic—with the aid of a mercenary-minded pharmacist—for which he had received a fee of 50 cents. He did not feel any too easy mentally to have unwittingly placed such an opportunity within her reach. He dispenses almost exclusively in his office now, very largely as the result of this incident.

To demonstrate how the manufacturers of medicines for physicians to dispense take advantage of the customs prevailing to-day let me quote you a portion of an article appearing in the June issue of the Druggists' Circular, entitled "Dispensing by Physicians," by Dr. Wm. F. Waugh: "We may say to our pharmaceutic friends that we have no desire to go into the dispensing of medicines, excepting in so far as they compel us to do so. We will not sit still and let ourselves be plundered by refilling, counter-prescribing and unwarrantable interference between ourselves and our patients, and by the other well-known grievances which we hold against the profession of pharmacy, especially since for all such ills we hold in our hands the remedy, in dispensing our own drugs." It will be noticed that refilling is the first evil mentioned, so let us endeavor to eradicate the cause for this complaint first.

Among the suggestions to the delegates to the Section of Pharmacology of the American Medical Association from the Chicago branch of this body the A. Ph. A. will call your attention to No. 6, which reads as follows: "The physician who writes the prescription assumes for it entire responsibility, and the pharmacist is responsible that the medicine is prepared as ordered. The physician has sole control over the prescription, except that the pharmacist is charged with its custody for the protection of both prescriber and dispenser. If the prescriber orders that the prescription be not refilled, such instructions must be observed."

To meet those views and in order to make it possible to carry them out fairly, honestly and in a perfectly legal way, I offer my Square-Deal Prescription Blank, for I feel certain that nothing short of it, or weaker in verbiage, will meet the question fully.

Recently I had the pleasure to submit this prescription blank to one of the most progressive and brainy medical men in our city, who immediately endorsed it, and has adopted same in his practice. He was very solicitous that it be presented to the American Medical Association at its recent meeting at Boston, Mass., but I preferred to first present it to this body of pharmacists for their consideration (and I hope approval and recommendation to the consideration of the American Medical Association at their next meeting at Atlantic City, N. J., next June).

It is my desire to have the solution of this eternal, irritating question come from the pharmacists to the medical men, with expressions of willingness to comply with its provisions, for the system is unquestionably what its name implies—*a square deal.*

Let us so conduct ourselves and our pharmacies that it can truly be said of the sister professions of medicine and pharmacy in the language of Addison:

> The friendships of the world are oft
> Confederates in vice or leagues of pleasure;
> Ours has severest virtue for its basis,
> And such friendship ends not but with life.

Mr. Claus moved that the paper be received and referred for publication.

This paper at once precipitated a lively discussion, participated in by quite a number of members and developing considerable difference of view.

Mr. Weinstein opened the discussion by asking how the proposed blank was to be put out. Mr. Apple replied that this was a matter of courtesy between physician and pharmacist. Mr. Weinstein said he took this to mean that the pharmacist was to have them printed and furnished to the physician, and he differed with the author on this and other points in his paper. In the first place, he said he believed it was high time that pharmacists should consider more their own dignity, and show less alacrity to comply with the wishes and desires of the physicians, whether justified or not. It is considered by many that the giving away of prescription blanks is a useless expense, having no real value to the pharmacist, and is unfair competition, besides. He could see no reason why the physician should prescribe on the blank proposed, limiting the right to refill, because no pharmacist could properly refill a prescription for a heroic remedy, like cocaine or morphine, without the physician's direction, but he should be allowed to refill prescriptions for innocent household remedies and some of the proprietary articles, without putting the patient to the annoyance and expense of getting another prescription. Let the physician look out for himself and protect his patient in the proper way, by saying so in writing on the prescription when he does not want it refilled; but do not call his attention to it and make it binding in every case, thereby giving him the chance to make all the money, while the pharmacist holds the bag.

Mr. Fisk agreed with the writer of the paper in the main, though he said there was some force in the remarks of the gentleman from New York with reference to the furnishing of blanks and refilling prescriptions for household and proprietary remedies. But looked at as a whole, he thought there was everything in support of the author's position, and he failed to see any injustice in it to anyone.

Mr. Stout, of Bluffton, Ind., said he could see no objection at all to the prescription blank of Mr. Apple. He lived in a small country town and had followed a somewhat similar plan, which, though not yet a year old, had resulted in doubling his prescription business. He had used a little sticker, something like that Mr. Apple described, saying that prescriptions could not be refilled without an order from the physician. He described some of the abuses of refilling, as in the case of parties who sometimes supply whole neighborhoods from one prescription.

Mr. Helfman, of Detroit, discussed that phase of the author's paper referring to the practice of dispensing by physicians, saying that every now and then some pharmacist would tell him that this evil had reached its maximum and was now receding; but he regarded that as altogether a delusion, and expressed his firm conviction that the practice was increasing, and in certain sections of the country had reached proportions fairly startling. He had had recent occasion to investigate conditions in Iowa in this respect, and was astonished to find that out of 3000 practicing physicians over 2000 dispensed their own medicines to a greater or less extent. It was bad enough in Illinois and Wisconsin, he said, but much worse in Iowa. Anything that will make for a better understanding between physician and pharmacist in this matter is greatly to be desired, for the evil is growing, and has already reached proportions that the average pharmacist does not see or understand.

Mr. Eliel agreed with Mr. Helfman that the evil of dispensing by physicians was on the increase, and had increased largely in the State of Indiana, and he was in perfect accord with every proposition named in the paper just read. He was for anything that would check the dispensing evil. Out of 87 physicians in his home city, only 14 did not dispense their own medicines—except such things that were expensive or required special manipulation. As to the question of refilling prescriptions, on every prescription that goes out of his store containing a patent medicine or drug liable to lead to a habit he places a label warning the patient that the prescription is for the particular indications existing at the time, and cannot be refilled except by order of the physician. This practice has brought about a considerable increase in his prescription business. He thought it would be still better to adopt the plan suggested in the paper, and said he would certainly adopt it in his store when he got home.

Mr. Wulling stated that many of the pharmacists of Minnesota were using blanks similar to those exhibited this morning,—probably a majority of the pharmacists of the state,—following the suggestion of some of the physicians. They had found that the physicians would favor those thus protecting them. He said a systematic effort was also being inaugurated in Minnesota to induce the physicians to write prescriptions more than in the past—and especially not for the average proprietary remedy, that has given the pharmacists so much trouble. The movement has not gained much momentum as yet, but is receiving the support of the physicians in the larger cities. In the smaller towns there seems to be no such trouble as that referred to here. There, the physicians and pharmacists are more closely related, and there is harmony between the two professions. He thought this condition was largely due to the efforts of the pharmacists in the smaller towns to be of use to the physicians: the pharmacist invites the physician to use his laboratory for making his experiments, and will offer to assist him in the work as well. Recent investigation as to half a dozen of these smaller towns has shown a healthy increase in the number of prescriptions written, and a corresponding decrease in the use of proprietary remedies. As to the matter of refilling, he said the sentiment in Minnesota was favorable to some such recommendation as that contained in the paper just read.

Mr. Gross, of Fort Wayne, Ind., made the statement that of the 150 practicing or licensed physicians in his city, 4 were so ultra-ethical they would not accept a prescription blank containing the name of any pharmacist—nor, indeed, would they accept a prescription blank at all, but had their own blanks printed and paid for them themselves. This was in line with what Mr. Weinstein had said about not furnishing prescription blanks, any more than paying rebates or anything else.

Mr. Sturmer said that a few years ago there were some ultra-ethical physicians in his city who refused to accept blanks from the pharmacists, and the problem was solved by the local association taking the matter up and discussing it thoroughly, with the result that the blanks were furnished by the association as such, and in its name, this course proving satisfactory to the physicians in question.

Mr. Williams, of Wisconsin, asked for suggestions as to filing prescriptions so a physician could refer to his own prescription at any time, and still not leave the whole file open to examination. Some physicians, he had found, objected to that.

Mr. Warner, of Indianapolis, said his system was to keep prescriptions under lock and key, and nobody could refer to them except the pharmacist in the store, who only took out for examination the particular prescription called for.

Chairman Alpers said a system of this kind was described by him in a paper read before the Association at the Philadelphia meeting 1902, the plan being to write upon a card a complete history of the prescription, so that any question about it could be answered from the card, which was filed in due order. He had used the system with great success.

Mr. Flemer, of Washington, wanted to know what show the pharmacist would have in court, where the physician demanded the prescription back. As to the restriction on the back of the form advocated by Mr. Apple in his paper, he claimed the courts had decided that such printed form was not binding, and that only the written instruction of the physician as to refilling would hold good in law.

Mr. Holzhauer said his rule was to give the original prescription back to the patient, if he desired it, or a copy of it; but only one copy is furnished. He did not think it worth the trouble to have friction with the customer by refusing to return the original or give a copy. He did not think it a fair deal to the physician to refill a prescription time after time, until the number of it became known in the community, thus giving to many others the benefit of the physician's knowledge.

Mr. Warner, replying to the suggestion of Mr. Flemer, said he thought if the physician would put his name or initials to the limiting clause on the back of the proposed prescription blank it would make it just as legal and binding as if the clause were written out in the physician's own handwriting and signed.

The Chair called attention to the fact as set forth in his address, that one of the questions submitted for answer as to foreign countries was, as to the custom of return of the prescription to the patient, and the responses received showed that to be the general rule—even in Portugal, where it is forbidden by law, such is the force of public opinion. It seemed to him the physicians in the state of New York had acknowledged that the custom of refilling prescriptions was admissible, since they had procured the passage of a law there prohibiting the refilling of prescriptions containing morphine, etc., it being an established principle of law that the exception proves the rule—that is, the passing of a law prohibiting this particular thing is equivalent to admitting that prescriptions in general may be refilled. Mr. Alpers said further that he believed in law the prescription belonged to the customer, and it was so regarded in other countries; he thought, however, that the pharmacist should regard the known wishes of the physician in the matter of refilling.

Mr. Stout was inclined to look upon a prescription as merely an order on the pharmacist for a certain medicine or preparation, and likened it to an order for a given sum of money, which the payee had a right to retain as his authority for making the payment, and of which he would not be bound to give a copy, which might be improperly used.

The Chairman suggested this distinction, that in the one case there was a simple paying over of what belonged to another, upon his written order to do so, whereas in the other case the pharmacist furnished a certain preparation or medicine, for which the party presenting the physician's order paid himself.

Mr. Weinstein stated that in New York, where several cases of this sort had come up in the courts, they had always been decided in favor of the rights of the patient, the decisions being to the effect that the prescription belongs to the patient.

The Chair suggested that under such a law the pharmacist might charge for a copy, but he could not refuse to give it.

Mr. Seaman, of New Jersey asked if there had not been a recent decision to the effect that the pharmacist had a right to keep the original prescription as a protection to himself, in case of complaint arising as to its proper filling, that being the best evidence he could have on that point; but nobody seemed able to answer the question.

Mr. Freerichs, of Cincinnati, though it must be a pleasure to any physician to know that his wishes as to refilling would be regarded, and this conviction on his part would lead to the more frequent writing of prescriptions. He commended this idea as set forth in the paper.

Mr. Lowe could foresee danger in giving up the original and retaining a copy only, since in case of disagreement between apothecary and patient as to the character of the preparation furnished the latter might claim that his copy was not correct.

The Chair called on Mr. Apple to close the discussion.

Mr. Apple said he felt like apologizing for his name appearing upon his proposed prescription blank; that it was against his wishes, as he did not want the patient to get the idea that he was in collusion with the physician. It was put there he said, because of the earnest entreaty of the physicians he had advised with, as they said they wanted the patient to know the druggist they had a preference for, and one who would do what was requested of him. The prescription blank, he further said, was not intended to be used except by those physicians who wished to throw some restriction about the use of their prescriptions, the idea being to bring about some uniformity in this respect and avoid bad faith on the part of the customer. The question is, whether the pharmacist is willing to respect the wishes of the physician where he considers that he has a property-right in his prescriptions.

Mr. Holzhauer thought this last proposition would be all right, if the physician would take the onus of it, and Mr. Apple said he would do so. Mr. Holzhauer expressed the belief that this blank would simply encourage the physician to restrict his prescriptions, leaving to the pharmacist all the trouble with the patient.

Continuing, Mr. Apple said he had had the pleasant experience of having three of his physicians throw out their entire line of tablets they had been dispensing, because he had shown them he was willing to respect their rights in this matter. If the pharmacist guarantees to the physician that he will protect him, he will be glad to help the pharmacist. He drew a picture of the injustice to the physician in having the result of his knowledge and experience sown broadcast, as it were, throughout the community, by means of the promiscuous refilling of a prescription at one time given a patient for indications then existing. The physician is the creator of the prescription, has a property-right in it, and is entitled to incorporate in it conditions of his own, just as a man can incorporate in a deed to land a provision against the erection of a brewery or a stable upon it, and the pharmacist should respect these conditions. Mr. Apple thought his proposed blank would fully meet the requirements of the case.

After a little further discussion of this paper in a desultory way, Mr. Dunning offered as an amendment to the motion to receive and adopt that, instead of adopting the prescription blank exactly as it reads in the paper, the principle embodied therein in regard to the form of prescription blank to be used—should be adopted rather than the particular form of prescription blank set out.

Mr. Warner seconded this motion, and it was put to a vote and carried.

The Chair said there was before the Section a paper on acetone collodions, by Mr. Geo. M. Beringer, of Camden, N. J., but as the author was not present, the custom of reading by title only would be recognized. The text of the paper here follows:

ACETONE COLLODIONS.

BY GEORGE M. BERINGER, CAMDEN, N. J.

In a paper read before the Philadelphia College of Pharmacy in February, 1892, the writer called attention to the remarkable solvent power of pure acetone, and predicted that in the future it would be found a useful solvent in pharmacy and chemistry. (American Journal of Pharmacy, 1892, fol. 147.) This prediction is fast being realized, and in the Eighth Decennial Revision of the U. S. Pharmacopœia it has been officially recognized and directed to be used as a solvent in the preparation of the official oleoresins, with the exception of the oleoresin of cubeb. Its solvent power for oils, resins, waxes, etc., has likewise greatly extended its use in the arts and manufactures.

The use of acetone in certain lacquers suggested its application to the preparation of collodions. Several of the so-called "liquid court plasters" now on the market contain this as a main ingredient. The intent of this paper is to publish formulas that appear to be satisfactory, without going into the details of a greater number of experiments. Suffice it to state that the simplest formulas have yielded the best results.

ACETONE COLLODION.

Take of—

Pyroxylin	5 Gm.
Camphor	1 Gm.
Acetone, a sufficient quantity to make	100 Cc.

Dissolve the pyroxylin and camphor in a clean bottle with 90 Cc. of acetone and, after solution has been effected, add sufficient of the acetone to make the product measure 100 Cc. If the pyroxylin is of a good quality the solution will be prompt and perfect, otherwise it will be necessary to permit the liquid to stand until it has become clear and then decant.

Acetone collodion, as thus made, evaporates a little more slowly than the official alcohol-ether collodion, but it yields a much stronger film, which is transparent, adheres closely to the surface and is flexible without the addition of other materials. In the writer's opinion this preparation possesses advantages over both the official collodion and flexible collodion, and should displace both officially, and render the latter title unnecessary. Acetone collodion, likewise, makes an elegant basic preparation for the application of the aromatic phenols, iodine, iodoform, etc., and a number of such medicated collodions are readily prepared and are very satisfactory.

ACETONE CANTHARIDAL COLLODION.

Take of—

Cantharides in No. 60 powder	60 Gm.
Pyroxylin	4 Gm.
Camphor	1 Gm.
Acetone, a sufficient quantity.	

Moisten the cantharides with 35 Cc. of acetone, and pack in a cylindrical percolator. Close and cover the percolator and macerate for 24 hours, then percolate slowly with sufficient acetone until exhausted. Reserve the first 80 Cc. of percolate and evaporate the remainder at a low temperature (55°–60° C.) to a soft extract. Mix this with the reserve and dissolve the pyroxylin and camphor in the mixture. Finally add sufficient acetone to make the volume 100 Cc. If not entirely clear set it aside in a cool place until it becomes clear by settling, and then decant.

This product is a clear, green-colored liquid, and possesses strong vesicant action. The camphor present is not objectionable, and its mildly stimulating effect is rather an aid to the action of the cantharides.

STYPTIC COLLODION.

The official formula for styptic collodion does not as a rule yield a clear solution of the tannic acid promptly.

Experiments with the acetone have not been satisfactory, a difficulty presenting itself which had not been anticipated or yet satisfactorily solved. While tannic acid is readily soluble in acetone to the extent officially directed (20 Gm. in 100 Cc.), yet when pyroxylin is added to the solution there is formed a coagulum which consists of most of the cotton associated with tannic acid. The experiments seem to indicate that acetone is not suited for the preparation of styptic collodion.

Samples of the acetone collodions produced by these formulas are presented and also samples of acetone collodions medicated with iodine and iodoform to the extent of 5 per cent.

The Chair called for the reading of a paper by Mr. F. E. Fisk, on the fatty factors of unguents, which the author presented, first explaining that the paper followed in the wake of two others on similar subjects that had appeared in the drug journals, and in the previous papers he had gone deeper into the chemical nature and physical methods of handling these oils, as to purification, clarification, etc., and for that reason he had not done so here:

THE FATTY FACTORS OF UNGUENTS.

BY FRANK E. FISK.

Among the puzzling problems that confront the pharmacist, few are more frequently encountered, or are more difficult of solution and less frequently solved, than those emanating from the fixed oils and analogous substances, constituting the bases of the ointments, liniments, and other well-known classes, which together comprise our external materia medica.

We say difficult of solution, which is doubtless true if applied to the *entire subject*, though many of the minor, as well as some of the major, obstacles of the class, may with comparative ease be overcome.

SOURCES OF THE DIFFICULTY.

While the extremely variable condition and quality of these products, as dispensed, cannot reasonably be traced to any one source, it is doubtless a fact, nevertheless, that ignorance of the true nature, chemical as well as physical, of this important class of substances is responsible more often than otherwise.

THE SUBSTANCES UNDER CONSIDERATION.

The drugs comprising the list according to official titles include many of the commoner commodities of commerce, which may account in some measure for the possession by too many pharmacists of their superficial, rather than intimate, acquaintance.

Adeps, adeps benzoinatus, adeps lanæ, adeps lanæ hydrosus, sevum præparatum, cetaceum, oleum theobromatis, oleum olivæ, oleum amygdalæ expressum, oleum gossypii seminis, oleum lini, oleum ricini, oleum morrhuæ and oleum adipis, all of which possess many physical characteristics in common, are so closely related chemically that they may be treated as members of the same family of fixed oils, differing chiefly in the percentage of their proximate constituents, viz.:

OLEIN, PALMITIN AND STEARIN.

These three proximate principles, constituting the bulk of the above substances, as well as many others, are composed of the three elements, carbon, hydrogen and oxygen, in slightly varying ratio, as indicated by their several formulæ, as follows: Olein, $C_3H_5(C_{18}H_{32}O_2)_3$, known chemically as glyceryl trioleate, the thinner or more fluid constituent of oils; palmitin, $C_3H_5(C_{16}H_{32}O_2)_3$, known chemically as glyceryl tripalmitate, and stearin, $C_3H_5(C_{18}H_{35}O_2)_3$, or the tristearate of glyceryl, each being the ester (analogous to salts) of the corresponding acid oleic, palmitic and stearic respectively, the elementary affinity assuring, under ordinary conditions, their grouping as above, the physical association of their proximate constituents with their differences as to degrees of firmness, with variation of fusing and congealing points, making their separation possible without the use of chemicals, a property that is of value in their production, preservation and analysis, accidental or intentional adulteration being indicated by their gravity and behavior at varying temperatures.

The above reference to the chemistry of the oils and their analogies, while of secondary importance, is made for the purpose of rendering more comprehensive the more practical study of the substances as we find them.

NATURAL IMPURITIES.

Aside from the natural constituents referred to as common to all of the oils and fats, there are others, which though unnecessary, are so seldom absent as to justify the name of "natural impurities," usually of the nature of ferments, more often of the albuminous type, which upon exposure to atmospheric influence, particularly at elevated temperatures, undergo chemical changes, resulting in the development of the very undesirable property known as

RANCIDITY.

This means the formation (by oxidation or fermentation) of some one or more of the so-called decomposition acids, accompanied by the injury, if not the ruination, of the product if given no farther attention. It is this property or condition that is responsible for many of the trials and tribulations of the "Knight of the Mortar and Pestle," and to the remedy that we would next turn.

THE OUNCE OF PREVENTION.

That the formation of these deleterious materials may be prevented has been repeatedly demonstrated by the producers of oils, who have kept in loosely-covered earthen containers olive oil, for instance, for periods of a quarter of a century in a fresh and sweet condition, and without the use of drugs or chemicals of any kind, the clarifying process utilized during the production alone being necessary. While, as before stated, these preventive or clarifying measures are of the simplest kind, consisting of the use of heat, with the object of coagulating the albuminous matter, expression with considerable pressure through straining material of close texture, and the washing with pure water with the object of removing water-soluble constituents, followed by the separation of the oil and water by nature's law of gravitation.

That these same methods are equally applicable to the other oils and analogous substances goes without saying, due attention being given to their fusing and congealing points.

THE POUND OF CURE

And the methods of using same constitute the more perplexing problems, as stated in the beginning, since they deal with the restoration of ointments, cerates, lotions and bases that have become offensive (if not worthless) through the formation of these noxious acids of decomposition, known severally as caproic, butyric, caprylic and valeric. The method of procedure is approximately the same for each substance, and consists of the complete (if possible) neutralization of these acids by means of an alkaline hydroxide in diluted aqueous solution, utilizing *much*, *little* or *no* heat, as indicated by the case in hand, mobile fluidity favoring, of course, the action of the base, the better method of raising the temperature being by means of *hot water*, with agitation as a washing process, removal or separation of this, followed by similar treatment with the cold alkaline solution, followed by washing with pure water at normal temperature, and straining or filtration.

A few erstwhile idle moments occasionally devoted *judiciously* to the "fatty factors" along lines here suggested will tend to replenish the exchequer of ye apothecary, as well as render more savory his "pedigree" as read by his "co-laborer," the physician, and his friends, the public.

Chicago, July 16th, 1906.

Mr. Weinstein briefly discussed the paper, and regretted that the author had not given in it a more complete statement of the method of clarification.

Mr. Sturmer called attention to what he said was an error or oversight in the classification of the substances enumerated in the paragraph on the first page, headed, "Substances under Consideration."

Mr. Fisk said it was as to *adeps*, and he would make the proper correction.

The paper was then received and referred, with the understanding that the author was to have the privilege of correcting any misprints or errors.

Chairman Alpers called Mr. Dunning to the chair, while he presented verbally a paper on circulatory displacement, prepared by himself. In illustration of the subject, Mr. Alpers conducted a number of interesting and successful experiments before the eyes of his audience. The text of his paper here follows:

CIRCULATORY DISPLACEMENT IN MAKING PHARMACEUTICAL PREPARATIONS.

BY WILLIAM C. ALPERS, SC. D.

Some years ago, when I contributed a series of articles on practical pharmacy to a pharmaceutical journal I described a scene in a laboratory, where a junior is told to clean a gallon bottle, at the bottom of which a layer of hard crystals of sugar had formed. He shook the bottle with water for a long time with but little result. Then he was told to fill the bottle with water to the very brim and invert it, and after doing so, the crystals separated in a few minutes. At that time I made the remark that circulatory displacement might advantageously be used in a number of pharmaceutical preparations, but I had then not time to give this subject any further attention. Lately I had occasion to prepare mucilage of acacia a number of times, and the troublesome official method did not please me at all. I then remembered the bottle with the layer of saccharine crystals and tried the same method in making the mucilage, by simply suspending a bag of cheese-cloth containing the acacia in the menstruum. The result was a complete success. In about 12 to 15 hours all the acacia had gone into solution, no shaking or straining being necessary.

The question then arose in my mind if this method could not be used for other preparations, and I instituted a series of experiments. For suspending the drugs I prepared small bags of cheese-cloth with a draw-string and a circular piece of wood at the bottom. This wooden ring prevents the bag from collapsing, and at the same time a larger surface of the drug is presented to the solvent. It can, of course, be made of any size according to the circumference of the vessel in which the preparation is made. I next tried liniment of camphor by suspending the camphor in cottonseed oil, and again the experiment was a decided success. It will take about 15 hours to make the liniment, and the resulting product needs no filtering nor stirring. The tedious water-bath is also eliminated. As a very appropriate vessel for making camphorated oil, I mention a large preserve-jar holding a gallon. The oil is put into it and the camphor suspended in the oil; the jar is then put on the shelf in the stockroom, and the liniment is ready for use when needed.

In both these instances, mucilage of acacia and liniment of camphor, the time to dissolve the drug is rather long, owing to the slowness with which solution is effected. It is different in other cases. Spirit of camphor can be made in eight minutes by this method. You noticed that I suspended camphor in the alcohol in this graduate just before I began to read this paper. You will see that it has disappeared entirely, and the alcohol has been changed to spirit of camphor. The time of solution depends greatly on the specific gravity of the body to be dissolved; the higher it is the more rapidly displacement takes place. The best instance of quick displacement is the preparation of tincture of iodine, in which case we can also plainly see the displacement owing to the color.

In the same way a number of tinctures might be made, as:

Tincture of aloes, and
" " aloes et myrrh,
" " asafedita,
" " benzoin,
" " cantharides,
" " gambir, compound,
" " guaiac,
" " myrrh,
" " tolu.

I have experimented with but two of these tinctures, benzoin and myrrh, with decided success. There is no doubt that also the others could be made in the same way. As the various gums, etc., do not go into solution entirely it is advisable to leave them about 24 hours suspended in the menstruum. I have found in the cases of myrrh and benzoin that by that time all soluble parts have been absorbed. To test this fact I removed the bag and washed the contents quickly with alcohol for several times. After that I again suspended it in pure alcohol and no trace of further solution was visible.

In the same way all infusions can be made. Among the papers to which I referred before there is one that relates to this subject. I recommend a small, cylindrical glass vessel, instead of a bag of cheese cloth, with a perforated bottom, over which a piece of filter-paper is put, a small disc of glass being placed over the drugs to keep them from floating on the surface of the water.

There are a few conditions that will influence the time of pharmaceuticals in this way, first, the temperature, particularly in the case of camphorated oil; second, the subdivision of the article to be dissolved, and third, the exposed surface of the drug. In most cases it is best to let the suspended drug just touch the surface of the solvent; the latter will gradually rise as the solution proceeds. In cases of infusions and some tinctures the solvent should reach the upper stratum of the drug.

Mr. Anderson moved that the paper be received and referred.

Mr. Weinstein said Mr. Alpers' paper suggested some of the practices of our forefathers, who employed similar means in the making of certain preparations. He was especially struck with the advantages of the method described in the making of camphorated oil, as compared with the very tedious method of the Pharmacopœia. He thought pharmacists should appreciate Mr. Alpers' ingenious method of manipulation.

Mr. Wulling said he had carried out many practical processes embodying the principles illustrated. Instead of using a bag, however, he had generally used a finely-perforated porcelain funnel for holding the substance to be treated—although he sometimes used a very fine cheesecloth, by which the drug would be filtered at the same time that it was dissolved. He had prepared a good many tinctures in this way, such as tincture of guaiac and myrrh, which he had made very effectively by this process. Benzoinated lard may also be made in this way, first melting the lard and suspending in it the perforated funnel containing the benzoin. Spirit of camphor he hardly thought necessary to make by this method, as the camphor is very easily dissolved and the mere placing in the bottle is sufficient. Tincture of iodine does not require potassium iodide, but the aqueous preparation of iodine he would make by suspending the iodine and potassium iodide in the water. But the point he wanted to make especially was, the substitution of the perforated filter for the bags.

Mr. Mittelbach said that, as to the tincture of iodine, he had followed a method similar to this that was brought before this Section at the Mackinac meeting. The party (Mr. M. I. Wilbert) who had a paper on this subject recommended taking a glass tube perforated at the bottom, placing the iodine in that. The result was similar to that described, but perhaps not quite as quick. Mr. Mittelbach said that while he was on the floor he would like to give his experience in dealing with the present official tincture of iodine, which led him to believe a mistake had been made by the Committee on Revision in adding potassium iodide. Two or three months ago, he had a dentist come into his store and order tincture of iodine, and he gave him the present official preparation. The next day he was back, and complained that there was a hard, crystalline precipitate formed on the surface where he had applied it, and said he thought may be a mistake had been made in giving him the old compound tincture; so he simply changed it and gave him the old tincture. This experience would seem to indicate that the present tincture of iodine is not suitable for dental purposes.

Mr. Sturmer suggested that as of course in practical work it would be necessary to use covered jars in making these tinctures and spirits by this method, he thought a wide-mouthed bottle, with a rubber stopper, would be desirable for the purpose.

Mr. Fisk heartily approved of everything the author had said in reference to his particular method of exhausting and dissolving the drug. He referred to a paper on this subject he had presented at the Mackinac meeting, and said he had utilized this process for twenty years. He especially commended its use with reference to mucilage of acacia, as to which he suggested that if, where lime water was used, the operator would take the pains to use a wide-mouthed jar, as described in his paper referred to, the turbidity spoken of would largely disappear, the turbidity being due to the fact of the considerable affinity of lime water and carbon dioxide gas. By making with distilled water and suspending the acacia as Mr.

Alpers suggests, in a vessel such as described, the question of turbidity will largely disappear.

Mr. Anderson said that no doubt every druggist had used the method described in some instances, but the thing which particularly appealed to him was its application to the making of camphorated oil, which suggestion alone he thought was sufficient to repay any practical pharmacist for the time and expense of attending this meeting.

Mr. Seltzer asked as to the cost of the bags employed in this process, and Mr. Alpers replied that his daughter had made those he used, but that the cost was but trifling.

Mr. Dunning expressed the opinion that the wooden hoops used were an essential feature of the bag, and they could be applied very much as with a sieve, where there is a hoop both on the inside and outside of the material used; and these hoops could be used over and over again, upon cleansing thoroughly.

Mr. Alpers explained that, at the Mackinac meeting, he had gotten a number of the little baskets made by the Indians there, and he had used the little wooden rings or spirals at the side of these baskets. He said they could be used time after time, after proper treatment, but the one he had handed around was a new one.

Mr. Stout suggested that these hoops were practically the same as those used by the ladies in doing fancy-work, and were readily obtainable anywhere.

Mr. Dunning commented upon the trials and difficulties encountered in making camphorated oil in the usual way, and agreed with Mr. Anderson in his estimate of the value of the process described by Mr. Alpers, and thought it a very useful and important suggestion.

Mr. Apple remarked that since the expiration of the patent-rights on chloroform, resulting in a material reduction in price, he had used chloroform instead of alcohol with much satisfaction, since it evaporated more rapidly and facilitated operations conducted in the usual way.

Mr. Dunning thought Mr. Apple must be mistaken in the suggestion that chloroform may be eliminated from the oils readily, as his experience had shown it was a hard thing to get rid of.

Mr. Eliel suggested that the rim of the ordinary palm-leaf fan, that everybody has around the house, would be an excellent thing from which to make the hoops in question.

Mr. Claus said the paper had been very instructive to him, and asked the author if he thought it was perfectly safe to use the hoops over again for other preparations. Mr. Alpers replied that as far as possible he used the same bags and hoops for a given preparation, but that by boiling them and removing the oil they could be used with perfect safety for other preparations subsequently.

Mr. Wulling suggested that hard-rubber hoops or rings would be impervious to these oils, and would probably answer the purposes better.

The Chair stated that the paper having been thoroughly discussed, he would put the vote on the motion to receive and refer for publication, and it was so ordered.

Mr. Alpers resumed the chair, and called for the election of officers of the Section as the next order of business, a matter which should have been attended to at the beginning of the session, but which was overlooked. He stated that so far only the name of H. A. B. Dunning, of Baltimore, was in nomination for the office of chairman.

Mr. Holzhauer moved that nominations be closed, and that the Chair cast the ballot of the Section, electing Mr. Dunning Chairman for the ensuing year.

The motion was seconded by Mr. Rapelye, and carried, and the Chair announced that he had cast the ballot as directed, and declared Mr. Dunning duly elected.

Mr. Joseph Weinstein was announced to be the only nominee for secretary.

On motion of Mr. Anderson, seconded by Mr. Rapelye, nominations for secretary were ordered closed, and the Secretary directed to cast a ballot electing Mr. Weinstein.

The motion prevailed, the Secretary cast the ballot, and the Chair declared Mr. Weinstein duly elected Secretary for the coming year.

Mr. Apple, the only nominee for Associate on the Committee, was elected in a similar manner, on motion of Mr. Claus.

Mr. Dunning was now called on by the Chair to present for discussion and criticism a series of prescriptions that he had collected during the year, presenting some peculiarity or incompatibility in composition or difficulty in compounding. Mr. Dunning had gotten together the following list of thirty-one prescriptions of the character indicated, but only had time to present *seriatim* the first twelve of them, pointing out their peculiarities or the difficulties encountered in dispensing, and inviting criticism upon them. These twelve prescriptions, as presented, were informally discussed, first and last, by quite a number of members, those taking part in the discussion being Messrs. Payne, Fisk, Dunning, Anderson, Ruddiman, Warner, Seltzer, Holzhauer, Williams, Alpers, Wulling, Weinstein, Blakeslee, Caspari, Jr., Wilbert and Kaemmerer.

No. 1.

℞	Potass. iodid.	ʒj.
	Liq. potass. arsenit	ʒj.
	Spt. aetheris. comp.	
	Aquæ camph.	aa ℥iss.
M.		

No. 2.

℞	Codein. sulph.	gr. xx.
	Kalii bromid.	
	Sodii bromid.	aa ℥ iss.
	Aquae	℥ iv.

No. 3.

℞	Sodii bicarb.	℥ iss.
	Codein. sulph.	gr. xx.
	Sodii bromid.	℥ j.
	Aquae	℥ iv.

M.

No. 4.

℞	Hydrarg. bichlor.	gr. xvi.
	Acid acetic. dil.	ʒ ss.
	Sodii biborat.	℥ i.
	Aq. rosae	℥ iv.

M.

No. 5.

℞	Acid. boric.	gr. 1½.
	Homatropin. hydrobromat.	gr. I.
	Aquae dest.	℥ j.

M.

No. 6.

℞	Chloral.	
	Menthol	aa ʒ ij.
	Alcohol	ʒ ij.
	Aquae camph.	ad. ℥ iij.

No. 7.

℞	Sodii bromid	℥ ss.
	Ac. hydrocyan. dil.	ʒ j.
	Elix. pepsin. et bismuth.	℥ iv.

M.

No. 8.

℞	Mag. ustae.	15.0.
	Ext. belladonnæ	0.1.

M. ft. pulv. No. I.

No. 9.

℞	Hydrastin. Muriat. flav.	gr. viij.
	Protargol.	gr. xvi.
	Aquae	℥ viij.

M.

No. 10.

℞	Quinin. sulph.	ʒ j
	Pulv. sennae	ʒ ij
	Syr. glycyrrhizae	℥ ij

M.

No. 11.

Acid. salicyl	gr. x.
Formaldehyd	℥ j.

M.

No. 12.

℞	Strych. sulph.	gr. ⅛
	Ol. Theobrom. qs.	
Ft. suppositoria No. XVI.		

No. 13.

℞	Acid. salicyl.	ʒ j.
	Acid. boric	ʒ ij.
	Glycerin.	
	Alcohol	aa. ℥ j.
	Aq. rosae	qs. ℥ viij.
M.		

No. 14.

℞	Adrenalin.	gr. ½
	Lanolini et olei	℥ ss.
M.		

No. 15.

℞	Santonin	gr. ⅓
	Ol. ricini.	ʒ j.
	Ol. menth. pip.	♏. ij.
	Ft. emulsio cum mucilag. acaciae	

No. 16.

℞	Holocain	gr. ij.
	Dionin	gr. vi.
	Vaselin	ʒ ij.
M.		

No. 17.

	Rochelle Salt	ʒ xij.
	Basham's Mixture	℥ viij.
M.		

No. 18.

℞	Chloral. hydrat.	ʒ iss.
	Acid. acetic	ʒ iss.
	Acid. salicyl.	ʒ j.
	Collodii	ʒ iv.

No. 19.

℞	Tinct. nuc. vomicæ	ʒ iij.
	Pepsini	ʒ ij.
	Tinct. cinchon. comp., q. s.	℥ iij.

No. 20.

℞	Stront. salicyl.	
	Potass. citrat.	aa ʒ iij.
	Tinct. cardam. comp	ʒ ij.
	Aquæ, q.s. ad.	℥ iij.

No. 21.

℞	Resorcin	gr. xxx.
	Menthol	gr. x.
	Alboleni, liq	℥ iij.

No. 22.

℞	Hydrarg. chlor. cor.	gr. j.
	Potass. iodid.	ʒ j.
	Tinct. nucis vomicæ	ʒ ij.
	Aq. menth. pip., q. s.	℥ ij.

M.

No. 23.

℞	Bitmuth subnit.	
	Lanolin.	
	Liq. calcis	aa ʒ iv.
	Acid. carbol.	ʒ ss.

No. 24.

℞	Hydrarg. bichlor.	gr. j.
	Vin. pepsin.	
	Aquæ	aa ℥ ij.

M.

No. 25.

℞	Hydrarg. bichloridi	gr. iij.
	Potass. permanganati	gr. xv.
	Creosot (beechwood)	gtt. xv.
	Potass. iodidi	ʒ iss.
	Syr. hypophosphit. comp	℥ iv.

M.

No. 26.

℞	Sodii bromidi	ʒ vj.
	Cactina pellets	No. C.
	Nitroglycerin tab.	aa gr. $\frac{1}{150}$ No. XL.
	Liq. potass. arsenit.	
	Tinct. digitalis	aa ʒ iv.
	Celerinæ	℥ ij.
	Elix. ferri, quinin. et strychnin, q. s.	℥ vi.

No. 27.

℞	Tongalin	℥ iiiss.
	Sodii salicyl	ʒ ij.
	Vini colchici	ʒ iv.
	Spt. terebinth	ʒ i.
	Tinct. pokeroot	ʒ j.

M.

No. 28.

℞	Cystogen.	
	Urotropin.	
	Boric acid	aa ʒ j.
	Tinct. nucis vom.	ʒ iij.
	Potass. citratis	ʒ iij.
	Sanmetto	℥ ij.
	Zean, q. s.	℥ iv.

M.

No. 29.

℞	Aloin	gr. ij.
	Quinin sulph.	ʒj.
	Strych. sulph.	
	Acid. arsenos	aa gr. j.
	Ferri redact.	gr. xij.
	Pulv. digitalis.	
	Pulv. scillæ	aa gr. v.
	Pulv. gentian.	
	Pulv. capsici.	
	Hyd. chlor. mit	aa gr. viij.
	Salol.	
	Acetanilid	aa ʒss.

No. 30.

℞	Papoid	ʒss.
	Acetanilid	ʒj.
	Quinin. sulph.	gr. xv.
	Strych. sulph.	gr. ¾.
	Ac. arsenos	gr. j.
	Pulv. Doveri.	
	Pulv. gentian.	
	Pulv. lactopeptin	aa gr. xx.
	Pulv. ipecac	gr. iij.
	Pulv. digitalis	gr. iv.
	Pulv. hydrastis	gr. vi.
	Hyd. chlor. mit.	gr. iv.
	Ext. cascar. sagrad.	gr. x.
	Aloin	gr. x.
	Podophyllin	gr. iij
	Ext. belladonnæ	gr. iv.

M. et ft. caps. No. XXX.

No. 31.

℞	Creosoti (beechwood)	gr. xv.
	Cerii oxalat	ʒj.

M. ft. pil. No. XV.

Owing to the lateness of the hour the following paper on "Prescription Difficulties," by Gustave Wolff, of New York City, was read by title and ordered printed in the Proceedings:

PRESCRIPTION DIFFICULTIES.

BY GUSTAVE WOLFF, PHAR. D.

The following prescriptions are submitted for criticism and comment. They are taken from the files of various pharmacies, and I am indebted to the courtesy of friends for many of them:

I.

Capsicum, powdered	℥vj.
Camphor, powdered	℥vj.

Mix, and make twelve horse balls.

Use ether to triturate the camphor to a fine powder. Let the ether evaporate and add the capsicum. Mix and add sufficient powdered tragacanth and mucilage of acacia to mass.

II.

Tincture cinchona comp	℥ iij.
Tincture digitalis	ʒ j.
Tincture nucis vomicæ	ʒ ij.
Cactina-pellets, Sultan Co.'s	C.
Tincture cardamom comp.	℥ ss.
Water enough to make	ʒ iv.

S: Teaspoonful three times daily before meals. Shake.
Dissolve the powdered pellets in the liquid.

III.

Zinc oxide	gr. lxxx.
Powdered opium	gr. xl.

Mix and make forty pills.
S: One before meals.

I used as excipient:

Tragacanth, powdered	gr. x.
Glycerin	q. s.

I used a large quantity of glycerin, as the mass hardens rapidly. Glucose would have made a better excipient.

IV.

Lead acetate, crystals	Gm. 12.
Alum crude, powdered	Gm. 8.
Water enough to make	Cc. 400.

Sig: Dilute with four parts of water. Externally. Poison. Shake.

Dissolve each of the salts in half the water, filter each solution separately, then mix. A finely divided precipitate is thus obtained.

V.

Sodium chloride	gr. xviij.
Carbolic acid	♏ viij.
Camphor	gr. viij.
Eucalyptol (Sanders)	♏ xiij.
Water	O. ij.

Mix and filter.

Dissolve the camphor and the eucalyptol in half an ounce of alcohol.

VI.

Sodium salicylate	ʒ ij.
Sodium sulphate	ʒ xij.
Sodium phosphate	ʒ x.

M. S.: Teaspoonful in a glass of water every morning.

Use the exsiccated sulphate and phosphate of sodium.

VII.

Codeine	gr. xv.
Terpin hydrate	gr. lxxx.
Syrup of hydriodic acid	℥iv.

M. S.: Teaspoonful every two hours. Shake.

The terpin hydrate ought to be dissolved in alcohol and some glycerin added. An alcoholic solution of codeine 1 to 5 was used.

VIII.

Suppositories of silver-nitrate, each	gr. iss.

Make twenty-four such. Wrap in tinfoil.
Sig: As directed.

They ought to be first wrapped in waxed paper, as the direct contact of the silver of nitrate and the lead in the so-called tinfoil should be avoided.

IX.

Strychnine sulphate	gr. iss.
Spirit of nitroglycerin	gr. j.

Mix and divide in sixty small pills.
Sig.: One pill after breakfast and supper.

A trituration of strychnine sulphate was used.

Powdered tablet triturates of nitroglycerin and sugar of milk, and glucose enough for each pill to weigh	gr. iss.

Talcum was used as dusting-powder.

X.

Tincture of nux vomica	ʒj.
Tannin	ʒij.
Peptonzyme	ʒiv.
Bismuth subnitrate	ʒvi.
Precipit. chalk, powdered	ʒxij.
Mucilage of acacia	ʒiij.
Cinnamon water, enough to make	fl. ʒiij.

S.: Shake. Teaspoonful with meals until relief.

A nearly solid mass results.

XI.

Strontium bromide	ʒj.
Extract belladonna, fluid	♏xii.
Bismuth subcarbonate	ʒij.
Mixt. Rhubarb and soda, enough to make	fl. ℥iv.

S.: Two teaspoonfuls between meals in water.

A solution of strontium bromide was used. A marked effervescence was caused by the reaction between the strontium and the bismuth, carbon dioxide being given off.

XII.

Menthol	Gm. 1.
Resorcin	Gm. 1.
Sweet spirit of nitre	Cc. 25.
Alcohol	Cc. 50.
Peppermint water	Cc. 50.

M. Sig.: For mopping the skin, externally.

A copious brownish-red precipitate formed, which, when applied to the skin, left a green stain. A nitroso-derivative of resorcin, an aniline dye was formed. The physician being communicated with, permitted the omission of the spirit of nitre. This ingredient, being subjected to tests, was found to contain some free nitrous acid.

XIII.

Oil of sweet almond	℥ iv.
White wax	gr. cccxx.
Spermaceti	gr. cccxx.
Powdered benzoin	gr. x.
Tincture of ambergris	♏. lx.
Powdered rice starch	gr. cccxx.
Powdered carmine	gr. xv.

M. S.: Make-up cream.

I used peach-kernel oil instead of the true oil of almond, and tincture of benzoin, minims 50, instead of the powder. The use of a little ammonia water to darken the carmin spoils its nice red color and turns it to a dirty blue. As the rice starch is first mixed with the carmin, before adding the melted fats, the color seems to be so light that one will feel tempted to improve it by using ammonia. But on adding the melted fats to the light-red powder the color darkens perceptibly.

XIV.

Goulard's extract	℥ ij.
Glycerin.	
Carbolic acid	aa ʒ ij.
Olive oil	℥ ix.

M. S.: Externally. Poison. Shake.

The lead acetate in the Goulard's extract and the olive oil seem to form a soap similar to that formed by linseed oil and lime water in carron oil.

XV.

Strychnine sulphate	gr. ij.
Ferric phosphate	gr. cxx.
Quinine bisulphate	gr. xxiv.
Phosphoric acid diluted	℥ i.
Syrup of ginger enough to make	℥ vi.

Sig.: One teaspoonful in water three times a day after meals.

A solution of strychnine was used. The soluble phosphate of iron was dissolved in hot water and the quinine in the acid. Each solution was mixed with half of the syrup and then poured together.

XVI.

Strychnine sulphate	gr. i.
Quinine sulphate	gr. xl.
Zinc valerate	gr. xx.
Calcium glycerophosphate	gr. xl.
Ergotin	gr. xx.

Mix and divide into twenty capsules.
S.: One three times daily after meals.

A trituration of strychnine and forty grains of a 50 per cent. trituration of ergotin was used and enough glucose to mass. This was put into No. 2 capsules. By filling the capsules dry a larger capsule would have been needed.

XVII.

Capsules ichthyol, each	♏x

Make fifty such.
Sig.: One thrice daily.

Fluid ichthyolate of ammonium was dispensed in soft capsules. They were returned a few days later as a dirty mess in the box. The water or glycerin contained in the ichthyol had softened the walls of the capsules. The solid ichthyolate of sodium was now dispensed in hard capsules, giving a satisfactory capsule.

XVIII.

Ichthyol	Gm. 0.75.
Extract of belladonna.	
Extract of opium	aa. Gm. 0.03.
Cacao butter	Gm. 2.00.

Mix and make a suppository. Make twelve such.
Sig.: One night and morning.

The solid ichthyolate of sodium and aqueous solutions of the extracts were used. Each suppository was wrapped in waxed paper.

XIX.

Pilocarpine muriate	gr. vj.
Tincture jaborandi	℥ ss.
Spirit rosemary	ʒ ij.
Petrolatum.	
Alcohol	aa ℥ iv.

M. Sig.: For scalp treatment, externally. Shake.

A disturbing feature was the petrolatum, which is insoluble in the menstruum.

XX.

Salicylic acid	gr. lx.
Acid oleate of sodium	gr. lx.
Phenolphtalein	gr. xxxvi.
Menthol	gr. viij.

Mix and make thirty-six pills.
Sig.: One every three hours.

The substances on mixing liquefy. I added:

Extract of licorice, powdered	ʒ ij.
Kaolin	ʒ j.

The acid oleate of sodium was interpreted to mean pure powdered castile soap.

XXI.

Podophyllin	gr. xv.
Powdered ipecac	gr. x.
Powdered aloes	gr. xx.
Compound extract of colocynth	gr. xx.
Extract of belladonna	gr. iij.

Mix and make twenty pills.
Sig.: One at bedtime when necessary.

Diluted alcohol was used as an excipient.

XXII.

Extract of opium	gr. vi.
Extract of belladonna	gr. iv.
Guaiacol, pure	℥ ss.
Lead acetate, pure	gr. iiss.
Ichthyol	ʒ iiss.
Cacao butter, q. s.	

Mix and make twelve suppositories.

The ichthyolate of sodium proved satisfactory. Each suppository was made to weigh half a dram.

XXIII.

Tincture of nux vomica	ʒ j.
Tincture of aloes	ʒ ij
Warburg's tincture with aloes	ʒ viij.
Evaporate and add peptenzyme	gr. 160.

Mix and make twenty capsules. (No. I. mass.)

Evaporation on a water-bath proved troublesome. The substitution of the powdered extracts in proper proportion would be a good procedure. Either dry or mass capsules could then be dispensed.

1. Spermaceti White wax Lanolin	each ℥ ij.
2. Olive oil	℥ viij.
3. Orange flower water	℥ vi.
4. Orange flower oil	℥ ss.
5. Tr. benzoin, simple	℥ j.

Mix. Sig.: As directed. Externally.

In summer time melt No. 1, add No. 2 cold, emulsify with No. 3 cold, add No. 4 and then No. 5. I used a small emulsifier, not a mortar. In winter time the oil must be added hot—that is, melted with the solids.

XXV.

Socotrine aloes, plv.	gr. xxxij.
Extract of nux vomica, plv.	gr. viij.
Extract of henbane, aqueous, pilulara	gr. vi.
Ipecac, plv.	gr. j.

Mix and make sixteen pills.
S.: One morning and night.

This mass is liable to be troublesome, as the pills after a while cake together. The use of no excipients, but plain elbow-grease is advocated. The pills ought to remain exposed to a current of air for one day and be dispensed in plenty of dusting-powder.

XXVI.

(*Clipping from a newspaper.*)

Borax Sulphur Terebene	each Gm. 1.
Lavender water	oz. 6.

Mix. S. Externally. Hair lotion. Shake.

This mixture is typical of the beauty-doctor's doings. The sulphur, being immiscible, remains lumpy in the bottle. The use of this lotion will give little pleasure to the misguided reader of the newspaper.

XXVII.

Powd. camphor	gr. vij.
Oleoresin of cubebs	drops x.
Glycerin	ʒj.
White petrolatum, enough to make	℥ j.

Mix. S. Externally, as directed.

Sulphuric ether was used for dissolving the camphor.

XXVIII.

Ferric arsenate	gr. j.
Strychnine sulphate	gr. ¼.
Extract of digitalis, powdered	gr. ij.
Ergotin	gr. xij.
Thyroidin (Merck's)	gr. xv.

Mix and make twenty-four capsules (No. 4 dry).
Sig. One after meals.

A trituration of strychnine and a 50 per cent. trituration of ergotin was used.

XXIX.

Strychnine sulphate	Gm. 0.002
Powdered rhubarb	Gm. 0.030
Ferrous proto-oxalate	Gm. 0.200

Mix and make a capsule. Make fifty such. (No. 4 mass.)
S. One t. i. d. a. c.

A trituration of strychnine and glucose was used. Glycerite of starch, containing water, decomposes the yellow ferrous salt into a green ferric salt. The capsules should be filled dry.

XXX.

Extract of cascara sagrada, dry	Gm. 0.030
Extract of gentian, dry	Gm. 0.010
Strychnine sulphate	Gm. 0.002
Ferrous proto-oxalate	Gm. 0.200

Mix and make a capsule. Make fifty such. (No. 1 dry.)
Sig. One t. i. d. a. c.

The same physician prescribed Nos. 29 and 30 for the same patient. The size of the capsule is much larger dry.

Mr. Anderson commented upon the good work done by the officers of the Section during the past year, culminating in an unusually interesting and instructive session of the Section on Practical Pharmacy and Dispensing, and moved a rising vote of thanks to these gentlemen accordingly. The motion was seconded by Mr. Payne, and the vote was put to the house by Mr. Anderson and carried unanimously.

The Chair announced that the time had now arrived for the installation of officers, and appointed Messrs. Payne and Fisk as a committee to conduct the newly-elected chairman to the rostrum. The committee performed this duty and Mr. Payne introduced Mr. Dunning as the new Chairman of the Section. Retiring Chairman Alpers complimented Mr. Dunning upon his splendid work as Secretary, congratulated him upon his promotion, and handed over to him the gavel as the emblem of his authority. Mr. Dunning expressed his appreciation of the kind words just spoken, as also of the honor done him in his selection as Chairman. He announced that he expected to begin his work at once, as the surest means of accomplishment, and made an earnest appeal to the members for a prompt response when called on for assistance.

The same committee escorted Mr. Weinstein, the new Secretary, to the platform, and Mr. Payne introduced him. Mr. Alpers congratulated the gentleman upon his selection, and prophesied from the interest he had taken in the work of the Section that he would prove a valuable man in the position as Secretary. Mr. Weinstein expressed his appreciation of the honor, but said he was not much of a speaker; he could do some good work, however. He was glad the Association was to meet next year in his home city of New York.

Mr. Apple, of Philadelphia, as the new Associate on the Committee, was brought forward to be installed, and Mr. Payne introduced him. Mr. Alpers complimented Mr. Apple on the papers he had presented before the Section, and felt assured he would be a valuable assistant to the Chairman and Secretary. Mr. Apple said he had had a number of offices bestowed on him in the past year, but none he valued so highly as this, coming from "the mother of all pharmaceutical bodies." He hoped to bear in mind that whatever is worth doing at all is worth doing well, and govern himself accordingly.

Mr. Dunning then took the chair.

On motion, the Section then adjourned.

MINUTES

OF THE

SECTION ON HISTORICAL PHARMACY.

First Session—Friday Morning, September 7, 1906.

The Chairman of the Committee on Historical Pharmacy, John F. Hancock, of Baltimore, in calling the meeting to order at 10 : 30 o'clock, said :

Gentlemen, the time has arrived for us to open the session, and I suppose the first order would be to give a short report that I have here.

ADDRESS OF THE CHAIRMAN.

Fellow Members: By vote of the Historical Section last year I was made its Chairman, therefore it becomes my duty to call this meeting to order, and in so doing will extend a cordial greeting to all present.

It is embarassing to say that I have not been able to make as much preparation for this meeting as it was my desire to do, but my colleagues, the Secretary and Historian, have done their part so well that it is to be hoped that the shortcomings of your Chairman will not be apparent.

If I am deficient in any particular I assure you that it is not for want of interest, or for want of appreciation of the honor in being permitted to preside over your deliberations.

Happily for the Historical Section its success does not depend upon any single individual; and I believe that there will be found at each annual meeting many members eager to take part in this work. This is no longer a matter of experiment, but an important, organic Section of the American Pharmaceutical Association that will rival other Sections in points of interest.

My predecessor at the annual meeting last year recommended that the duties of the officers be defined as follows: That the Chairman confine himself to presiding at the sessions of the Section, and that his address be mainly a review of the work of the Section during the year, an accounting of the funds received and expended and such suggestions as he may deem expedient for carrying out the work for the coming year. That the duties of the Secretary be to record the minutes of all meetings in a suitable record book. To keep the accounts of the Section. To draw all necessary vouchers, which must be signed by him and countersigned by the Chairman. And to perform such other work as shall logically fall to the affairs of his office. That all other work pertaining to the Section should be performed by the Historian. These recommendations were adopted by vote of the Section.

It was proposed by the Historian that reminiscences of the two ex-presidents to be memorialized, George W. Sloan and William Procter, Jr., be collected and made a prominent feature at this meeting, and the correspondence with personal friends and acquaintances of these two deceased members has been successful, as will be shown by the reminiscences to be presented at the proper time. The reminiscences of old friends and the letters of deceased members are interesting and instructive and should be collected from year to year.

In no age or country have the elements of practical and scientific pharmacy been so active in the making of history as at the present time in North America. The fifty-four years of progressive life of our Association have produced results that are gratifying, and being recorded in the annual Proceedings, make an interesting history. The evolution of pharmacy has gradually expanded until a wider range of thought and research claims attention than ever before. Within the history of the American Pharmaceutical Association, pharmaceutical chemistry has brought to light many facts in the interest of therapeutics of which our predecessors did not dream, and to-day we may be standing on the threshold of discoveries still more startling. Such facts are of interest to the Historical Section and should be recorded by the Historian.

The aggressive age in which we live demands close observation and careful discrimination. This is pre-eminently a commercial age and the ideas of money-making too frequently dominate other interests. This condition has corrupted alike, in many cases, certain physicians and pharmacists who often substitute schemes for honest endeavor. Colleges of Pharmacy like drug-stores are more numerous than necessary and in many cases are conducted too much on the competitive plan. Large and expensive plants for the manufacture of pharmaceutical products and chemicals, while very essential in many particulars, are sometimes very objectionable in their methods, and do much to demoralize the practice of pharmacy. The same may be said of the methods of many retail pharmacists. Duty, honesty, and consistency, the three principles that should be observed in business and professional intercourse are not always practiced as they should be. The results that follow such dishonest practice as well as those wrought by square, intelligent dealing make history and should be recorded by the historian. Following these ideas, the literature of trade, biographical and historical essays, the published proceedings of organized pharmaceutical bodies, the detail of methods and the provisions of attempted and enacted laws to regulate the practice of pharmacy, educational methods and correlated facts should be recorded by the historian through the assistance of the members of this Section. Antedated pharmaceutical implements and machinery as well as those that are modern should be contributed to this Section when possible. In fact anything modern or antique will be thankfully received, because it is hoped that in the near future this Section may be able to find a safe and permanent home for its collection through which it may establish a Museum of Pharmaceutical Interest.

Your Chairman has allowed his mind to dwell upon the Historical Section and its great work until it has so completely absorbed his attention as to make him feel that he is but an atom of the proposition. It must be remembered that results such as it is the mission of this Section to accomplish can be successful only through the combined efforts of those who are seriously interested in the work. Since there are being organized in the States and the Provinces of Canada local organizations of the American Pharmaceutical Association, I would suggest that their respective presidents be invited to appoint historical committees to act as auxiliaries of this Section in the collecting of articles and data of historical interest to pharmacy.

Thomas Carlyle said that "To a great extent the history of the world was the biographies of its great men," and as this is true, the Historical Section should not overlook the value of reviewing the achievements of the great men of pharmacy, especially those who have been members of this Association. All knowledge is comparative, and it is necessary to keep in mind the things of the past as well as those of the present, for some of the greatest men that the world has ever seen have lived in the past. Although modern scientific discoveries have transferred those of the present day into a new world of multiplied comforts and advantages, the historical contrast between the ancient and the modern is interesting, and relates to all the affairs of life. All past ages have had a pharmacy equal to their civilization. Ours is the most complete in appointment of all time. May we claim therefore the highest degree of civilization? We still have much to cultivate in the field of pharmaceutical chemistry, and in my opinion the best results will come from sound educational methods. I have not so much hope in political legislation, which at best exposes our craft to selfish influences that lead to bad results.

I am favorably impressed with the memorial services that will be held in special session by this Section, and would recommend that a memorial session be held by this Section at each annual meeting. There is quite a list of worthy members who have departed from the scenes of active mortal life. Their deeds of usefulness, character and inspiring example are worthy of remembrance and introduction to our younger members. I do not believe in hero-worship, but I have always loved my friends and delight to dwell with them in memory. This year we have two names to honor in memorial service—of men who occupied the Presidential chair with dignity and ability. In some regards—in nobility of character and devotion to duty—they were much alike. The memories of George White Sloan and William Procter, Jr., are without blemish.

In closing, permit me to make a few personal remarks. I have never appreciated anything more than my election to the Chairmanship of this Section, and I will ever remember your kind consideration of one who, according to the reported statement of a learned physician, should have been chloroformed several years ago. During the present summer, however, the prolonged humid atmosphere, particularly of the last month, made me realize that the power of endurance is not as great as it was in the years gone by, and I have been admonished to lighten my burden. This is a duty to my family.

The American Pharmaceutical Association has been kind to me, and my great regret has been that I have been of so little service to it. The compliments that have been paid me by the members at different times are all the more appreciated, because I have never directly or indirectly sought any office or position in its gift, with the exception of one. I did desire to become a member of the William Procter, Jr., Monument Fund Committee. I still desire to be continued on that Committee as long as I máy live, or until the monument shall have been erected and dedicated. Its accomplishment will be my greatest joy.

Mr. Hallberg: If you will bear with the Secretary he will assume temporarily the functions of the Chairman. It is not necessary to have any motion that the Chairman's address be received or even that it be referred for publication; but there are some suggestions in the address and I would suggest that they be referred to the officers for the ensuing year, to give effect to the arrangements suggested with reference to Canadian members, I believe, with the recommendation that the incoming officers act upon these suggestions.

Mr. Rusby: I move you that the suggestions contained in the Chairman's address be referred to the officers for the ensuing year.

The motion was seconded, stated by the Secretary and carried.

Mr. Hallberg: I should like to read an outline of the program so that we will know what we have. Next will be the report of the Secretary.

4. Report of the Historian. 5. Reports of Committees. 6. Reading of Papers—An Early Forerunner of the National Formulary, by Mr. Wilbert, and a presentation of some historical material, by Mr. Wilbert, presentation of a Prescription File, by Mr. Howell, and also some old implements; a Historical Sketch of the New Jersey Pharmaceutical Association, by Mr. Sayre; Reminiscences, by Ewen McIntyre; Letters from deceased members of the American Pharmaceutical Association, by Mr. Hancock; Collection toward a Pharmacographia Americana, by Edward Kremers; Miscellaneous Business; Election of officers and adjournment. This comprises the subjects for this session.

Mr. Hancock, having resumed the chair, called for the report of the Secretary.

Mr. Hallberg: Mr. Chairman, the Secretary has not been burdened with any particular details, these having been largely assumed by the Historian, and he being practically a permanent officer it enables him to have a systematic plan to continue the work from year to year. So the Secretary, aside from the presentation of the program, which was made up by the officers, has nothing else to offer and therefore in lieu of any report would like to read a few lines of a poem by Sam Walter Foss.

The Path the Calf Made.

One day, through the primeval wood,
A calf walked home, as good calves should;
But made a trail all bent askew,
A crooked trail as all calves do.

Since then two hundred years have fled,
And, I infer, the calf is dead.
But still he left behind his trail,
And thereby hangs my moral tale.

The trail was taken up next day
By a lone dog that passed that way;
And then a wise bell-wether sheep
Pursued the trail o'er vale and steep,
And drew the flock behind him, too,
As good bell-wethers always do.

And from that day o'er hill and glade
Through those old woods a path was made;
And many men wound in and out,
And dodged, and turned, and bent about
And uttered words of righteous wrath
Because 'twas such a crooked path.

But still they followed—do not laugh—
The first migrations of that calf,
And through this winding woodway stalked,
Because *he* wabbled when he walked.

This forest path became a lane
That bent, and turned, and turned again;
This crooked lane became a road,
Where many a poor horse with his load
Toiled on beneath the burning sun,
And traveled some three miles in one.
And thus, a century and a half
They trod in the footsteps of that calf.

The years passed on in swiftness fleet,
The road became a village street;
And this, before men were aware,
A city's crowded thoroughfare;
And soon the central street was this
Of a renowned metropolis.
And men two centuries and a half
Trod in the footsteps of that calf.

Each day a hundred thousand rout
Followed the zigzag calf about;
And o'er his crooked journey went
The traffic of a continent.
A hundred thousand men were led
By one calf near three centuries dead.
They followed still his crooked way,
And lost one hundred years a day;
For such reverence is lent
To well-established precedent.

A moral lesson this might teach,
Were I ordained and called to preach;
For men are prone to go it blind
Along the calf paths of the mind,
And work away from sun to sun
To do what other men have done.

They follow in the beaten track,
And out, and in, and forth, and back,
And still their devious course pursue,
To keep the path that others do.
But how the wise old wood-gods laugh
Who saw the first primeval calf!
Ah! many things this tale might teach,
But I am not ordained to preach.

Mr. Rusby: This is one of the best things I ever heard.

Mr. Whelpley: I am exceedingly sorry that our Secretary is not the author of this so that we would have the prospect of further productions of the same kind.

Mr. Shepperd: I rise to a question of privilege. I thank the Secretary for not leading up to Boston streets, as I thought he was going to do at the time.

Mr. Ewen McIntyre: It is the actual history of Pearl street, New York.

The Chairman: Gentlemen, you have heard the Secretary's report as read; what action will be taken?

Mr. Lemberger: I move that it be received and take the usual course in the Proceedings.

The motion was seconded and carried.

Mr. Hallberg: The next subject is the report of the Historian.

Mr. Edward Kremers then read his report which was as follows:

REPORT OF THE HISTORIAN.

Until the new National Museum, now in course of construction, is completed, and its officers are ready to take over the historical collections of this Association, the principal duty of your Historian will be to strive to spread the interest in the past of our profession. One of the best ways to accomplish this is to collect, though in a but modest way, and to persuade others to do likewise. Appended hereto will be found a list of names of persons who, during the past year, have made such minor contributions.

The principal event of the past year, however, lies in the recognition of the activities of this Section by the American Medical Association.

Early during the summer of 1905, Dr. Wynne, Director of Exhibits, invited your Historian to make an exhibit for the American Pharmaceutical Association at the Portland meeting of the American Medical Association. The time, however, was too short. The invitation was then extended for the following year and renewed early this year.

Inasmuch as the new edition of our Pharmacopœia had made its appearance since the Portland meeting of the American Medical Association, and since physicians generally take but little interest in the joint standard of the two professions, it seemed advisable to make a beginning with a historical exhibit of pharmacopœial literature, more particularly since an exhibit of a literary character had been suggested by Dr. Wynne himself.

To make such an exhibit required money. Upon inquiry, the Chairman of the Council expressed his opinion that it would be highly desirable to make such an exhibit. In his dual capacity as member of the Board of Trustees he also provided the ways and means to carry out the proposed plans. Your Historian thought that $100 would be sufficient to make such an exhibit, but the Board voted $150. However, somewhat less than the first amount was needed, and the balance has been returned.

The exhibit made consisted principally of the Sheppard Collection of Pharmacopœias, which was kindly loaned by the trustees of the Massachusetts College of Pharmacy, to whom and to Dean Baird the thanks of this Association are due. Thanks were also extended to the National Library Bureau of Boston for the loan of five library book-cases and other furniture; likewise to the Remington Typewriter Agency of that city for the loan of a machine. Last, but by no means least, your officer was indebted to Professor Scoville for his kind co-operation before, during and after the meeting.

The value of the exhibit lies first of all in the fact that it afforded another means of bringing physician and pharmacist together. Nowhere should their joint interests possibly manifest themselves more than in the establishment of pharmacopœial standards. The value of bringing old pharmacopœias to the special attention of physicians lies in the fact that they are largely or even entirely the product of medical activity. It is a pleasure to be able to report—though this manifestation was in no wise attributable to the exhibit—that it became apparent at one of the sessions of the Section on Pharmacology and Therapeutics that the present indifference on the part of the medical profession in pharmacopœial affairs is seemingly producing a reaction.

As an exhibit, pharmacopœias can scarcely compare with historic "saws and whittles" at a medical meeting. The expectations of your Historian, therefore, were not screwed high, but such expectations as he had were fully realized with but one exception.

The Boston meeting of the American Medical Association will long be a memorable one. Many of the sections held the meetings in that magnificent group of buildings known as the New Harvard Medical Laboratories. In the main or administration building the historical exhibits were arranged, and it was here, in the large hall to be devoted to a medical museum, that the pharmacopœial exhibit was given a very attractive though somewhat out-of-the-way space. Whether the thousands of visitors who thronged these buildings every afternoon would have taken a greater interest in old books had they been exhibited nearer one of the main thoroughfares, seems doubtful. The persons who are interested in old tomes, as a rule, prefer a quiet, cosy corner.

The immediate results in dollars and cents to the Board of Trustees was, no doubt, nil. When calling for the copies of the latest edition of the U. S. P. at the booth of their agents, located among the commercial exhibits, one of the promoters of medical books asked the pertinent question: "Do you expect to sell Pharmacopœias here?"

The program provided for a talk on pharmacopœias during one of the afternoons. The historical subjects were sandwiched in between two groups of live scientific topics. None of the other exhibitors of historical objects had made their appearance. Neither could the Chairman of the Revision Committee, who had been invited to say something about the revision of the U. S. P., be present; consequently, this part of the programme was not carried out.

It is to be hoped that this new relationship thus initiated may be continued and fostered by this Association. This duty, however, should not fall solely on the Historical Section. The Scientific Section might well undertake an exhibit of synthetic new remedies, arranged on a scientific, not a commercial basis. The Sections on Practical Pharmacy and Dispensing could give object-lessons on incompatibility in prescription-writing with the prescriptions, in the physicians' own scarcely legible hand-writing, on the screen. The Section on Education and Legislation might prepare an exhibit on pharmaceutical institutions of learning, and, incidentally, point out that those connected with colleges of medicine, as a class, possibly occupy the lowest position in the different groups of institutions which we commonly recognize. Even the Section on Commercial Interests might prepare an attractive exhibit whereby the therapeutic nihilist, by no means unknown in the medical profession, might be given some idea of the important rôle which drugs are still playing in modern human society.

By directing one Section each year to make an exhibit, the burden would not fall heavily on any one officer, and secure a better representation of the Association's activities. The thanks of this Association are certainly due the Board of Trustees for having made this first exhibit of the American Pharmaceutical Association at a meeting of the American Medical Association a possibility. While other more striking or attractive subjects might well have been chosen, scarcely any other would have carried with it the same degree of professional dignity and disinterestedness.

Respectfully submitted, EDWARD KREMERS.

Madison, Wis.

The Chairman: Gentlemen, you have heard the Historian's report; what shall we do with it.

Mr. Oldberg: I move that it be received and take the usual course.

Mr. Hallberg: In addition I would suggest that there are several recommendations which ought not to be lost sight of, and they ought to be referred to the officers for the ensuing year.

The Chairman: Unless objection be made, it is understood that the recommendations made by the Historian of this Section will be referred as requested.

Mr. Ebert: In doing that I would like to call attention to one point. I believe it would be a good idea if the Association of Pharmacy Boards could induce Professor Remington to deliver before that body sometime or other an address on the matter of prescription-writing. I believe it would do lots of good if we could induce them to listen to such a discourse. I simply offer that as a suggestion for future consideration.

Mr. Remington: Mr. Chairman, I believe that this Historical Section is one of the best things that has ever been established by this Association. I do not want to take up the time of the Section, but I have a suggestion to make. I believe it will be the means of bringing into this Association members that we have been heretofore unable to get. The prevailing impression in the minds of a great many members of the drug trade and profession is that the scope of the American Pharmaceutical Association is somewhat limited. Since the establishment of this Section and that on Practical Pharmacy and Dispensing I believe we have been able to get members whom we have not had heretofore. Now what appeals to me in a practical way is the use that could be made of the work of this Section to continue the interest of men who have historical tendencies; and I hope the Secretary, who is so interested in drawing members to the Association, and the editor of the Bulletin, may be authorized to make an abstract of some of the interesting things which would be useful to other pharmaceutical journals, and the pharmaceutical journals will be very glad to print them and lighten up their pages with some of the interesting facts which are produced in the papers read in this Section. And I hope that during the coming year effort will be made to give publicity, as far as publicity is possible, in every way, to the work of this Section. I do not make a motion. I think it is only necessary to make the suggestion.

Mr. Whelpley: Mr. Chairman, following up the same thought, I would move that the Secretary be requested to furnish the Committee on Publication with abstracts of some of the contributions to this Section, and that as far as possible reference be made to pharmaceutical periodicals in which papers and other contributions are published in full, so that these become of historic value as part of our Proceedings, and that the Committee on Publication be requested to carefully index, not only the abstracts that are given, but also the titles, so that by reference to our index we can find in the volume of the Proceedings the titles of the contributions to this Section, and by referring to these titles find the reference to the pharmaceutical journals in which they are published. I make that as a motion.

The Chairman: There is one motion pending now.

Mr. Hallberg: The original motion was that the report of the Historian be received and that the suggestions contained therein be referred to the officers for the ensuing year.

The Chairman stated the motion announced by the Secretary and it carried.

Mr. Whelpley: I now beg to renew my motion. The idea is this: That the volume of the Proceedings should contain abstracts of at least some of the contributions made to this Section; that the Proceedings should contain reference to every item that is brought before the Association, and that in future as far as possible it should give reference to the pharmaceutical periodicals in which articles are published in full, or even abstracts of articles, and that the index to the volume should contain the titles of all matter turned over by the Secretary, so that if some one presents a subject at this session and it is not even abstracted in the Proceedings, that a person looking in the index of the Proceedings will be able to refer to the minutes of our meeting and in these minutes find the name of the pharmaceutical review or some other publication in which the article is published in full, so that in future we can find contributions made to this interesting department.

The motion was seconded.

The Chairman: You have heard the resolution offered by Mr. Whelpley, which I believe has been seconded. Are there any remarks?

Mr. Hallberg: Mr. Chairman, I think the By-laws and Rules place all this matter in the hands of the Historian, if I am not mistaken. The Secretary is not competent to do this because all this matter is in the hands of the Historian. If I am correct, and I believe I am, then the motion might be modified that the Historian present the list of the contributions and that they go in with the minutes of the Section.

Mr. Kremers: I hoped the motion would go through without discussion, because it is a thing that I recommended a few years ago but it did not go through at that time. I hope Mr. Whelpley's motion will prevail. I think the success of this Section will depend largely upon the interest and work of the Chairman and Secretary, and it seems to me these officers should correspond to the officers in the other Sections. We do not want to make a particular section of this. The Secretary should perform the usual duties. The recommendation is that all these papers should be printed by title only as has been done before. The fact can be published in the Proceedings that such and such paper has been published elsewhere.

Mr. Hallberg: The Secretary does not see any of this matter and therefore the list with all possible information should be furnished to the General Secretary by the Historian for incorporation in the minutes.

Mr. Kremers: All right. The Historian will furnish the information.

The Chairman: The resolution, therefore, is perfectly consistent except that it should be changed to Historian instead of Secretary.

The motion was stated and carried.

The Chairman: I believe it would be a good plan if a list of the contributions for each year could be made. It would save a great deal of duplication. Now I had sent here to Indianapolis this year a little pamphlet prepared by ex-President Sloan, "Fifty Years in Pharmacy," which I intended to give to the Section, and found from Mr. Ebert that we already had it. It would save duplication if the officers of the Association could be furnished with a list of the articles contributed at each annual meeting. I give this as a suggestion.

Mr. Hallberg: The Secretary has no reports of committees in hand and the next order of business is the reading of papers. I beg to state that there are eight papers, and in order to provide for adjournment at the proper time and allow a little leeway for discussion I would suggest that no paper be allowed more than five minutes for presentation. The first paper on the program is "An Early Formulary," by M. I. Wilbert, of Philadelphia.

Mr. Wilbert then exhibited a copy of an old book published in 1818 by Danielson, of 45 John street, New York, and read extracts from it to show its quaint style and matter. He stated that the book consists of two hundred pages and includes some of the then popular patent medicines. Among them is the Cardiac Pill, an imitation of Lee's Anti-Bilious Pill, the first medicine patented in this country. It was patented in 1796. Mr. Wilbert also referred to the Unofficial Formulary, published by the Maryland College of Pharmacy, in 1873, a copy of which was presented to the Association by Mr. Hancock.

Mr. Hallberg: The next item, also by Mr. Wilbert, is "The Presentation of some Historical Material."

Mr. Wilbert: This is just a number of pictures, a collection of prints presented last year and some additional data. Apart from that I have here an interesting collection of Franklin material. In Philadelphia recently we celebrated the 200th anniversity of the birth of Benjamin Franklin. Franklin, along with all his other activities had an active influence on the development of medicine and pharmacy in this country. He was a patent-medicine and drug seller and did quite a business on Market street near Second. He was the founder of the University of Pennsylvania and the Pennsylvania Hospital and influential in the establishment of the first medical school. This material relates to that.

Then here I have a reproduction of the sign of Benedict Arnold, who was probably the most despised man in the United States, who was at one time a member of our craft, a druggist who had served his time in Connecticut and opened a shop in New Haven. That is practically all I have to present.

Mr. Hallberg: I move that this interesting presentation by Mr. Wilbert be received and carefully preserved.

It was seconded and the motion prevailed.

Mr. Hallberg: Next we have two papers by Mr. Howell, of Raleigh, N. C.

Mr. Howell: Gentlemen, I have been looking for old books for a number of years and I have collected 176 volumes, 50 of them published before 1800. I have brought along a copy of "The English Physician," an interesting book by Nicholas Culpepper, published in 1653. It takes up 369 English drugs. The author says they will cure Englishmen. There is a story in the back of the book of the first Sherlock Holmes. This man wrote 59 books. He speaks vigorously against naming drugs St. Johnswort, St. Peterswort, and has much to say of midwifery and midwives.

This second book is a treatise on Systems of Botany running over the period from 1583 to 1800. It is a synopsis of twenty-two systems of classification of plants from Cæsalpinus to Moench. (The paper was read by title and a copy of the manuscript deposited in the archives of the Association.)

The last thing I would like to present to the Association is a prescription-file used in Raleigh during the Civil War. This is historical. Raleigh was connected by railway with Wilmington, the port, which was blockaded by 30 boats. People were all the time trying to run the blockade, because on one trip they made as much as six or eight hundred thousand dollars, taking out cotton and bringing back surgical and medical supplies. You will find the prices marked on the prescriptions to be reasonable considering the depreciation of Confederate money. This book came from a store which is still running in Raleigh. The price of one drachm of quinine is marked at ten dollars. In another case 70 one-grain protoiodide of iron pills cost six dollars. Here is a half-ounce of balsam of copaiba and a half-ounce of tincture of cantharides costing $6.50. Physicians had to write their prescriptions on any kind of paper. Accompanying the prescription-book is a bundle of Confederate money in five and ten cent bills.

On motion of the Secretary the articles exhibited by Mr. Howell were received for deposit in the archives of the Association.

Mr. Hallberg: Next is a "Historical Sketch of the New Jersey Pharmaceutical Association," by Edward Sayre.

This paper is a continuation of the author's contributions to the history of pharmacy in New Jersey. In the absence of the author the paper was read by title and, like a previous manuscript, referring to the Kings County Pharmaceutical Society, deposited in the archives of the Association.

Mr. Ewen McIntyre was then called on to read the following paper, entitled:

THE DRUG TRADE OF MORE THAN HALF A CENTURY AGO, AND SOME OF THE INCIDENTS LEADING TO THE ORGANIZATION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

In 1842 I assumed the responsible (!) and usual position that fell to the lot of lads ambitious and desirous of becoming retail pharmacists: sweeping out the shop in the morning, dusting and placing things in order, washing bottles, keeping the soda-water counter in order, as well as all the little odds and ends commonly done in those days.

One incident, not even then common or always a part of our professional work, which occurred shortly after my introduction to the mystery of our business, may be interesting and amusing. An apothecary on the opposite corner, divesting himself of most of his clothing, placed his books on the stove and, locking his doors, commenced throwing his bottles out of his windows at the passers-by; finally the smoke from his books suggested the calling to the scene of the nearby hose carriage; the fireman, after attaching his hose to the hydrant and turning his hat around, directed the water on the apothecary, who was soon laid out on the floor; he was then bound, and three of the neighboring doctors called, who thought he might be crazy; however, he pleaded with them to release him, which they did, when he suddenly attacked them and they fled to the street; the last, a short, fat man, assisted by the apothecary's foot. He was again bound, the scientists or experts then deciding that he was insane.

Some of my hearers are quite aware that most of the drugs at that time were powdered in the shops, with the now little-used mortar and pestle. There were some exceptions; one comes clearly to my mind, curiously and forcibly illustrating the characters of some mercantile men. My employer was busily engaged spreading a fly-blister, when, looking up at his customer, a wholesale druggist, he remarked: "Mr. Duryea, see how good your powdered flies are." "Ah, but, George, this plaster is for my daughter, and she is very ill." George laid down his spatula and savagely said: "Why, Mr. Duryea, you stated to me when you sold me these powdered flies that they were the best and you could guarantee them. Why, sir, I never spread a plaster that is not for *some one's* son or daughter, and it was on your assurance that I bought them; and now you stand there giving a doubt as to their quality and to your own statement."

About these days a young man, a student in pharmacy, was directed to get what was then new in the shop, a package of Precipitated Chalk. On reaching the store with it he naturally examined it, finding it very white in appearance and a fine specimen, but on further examination discovered to his astonishment, that it was not a carbonate but a sulphate of lime, and the next morning called his employer's attention to it, who on looking at it said, "Impossible, look at it and look at the maker's name, Wm. Bailey, Woolverhampton, Eng.," but he also on testing it came to the same conclusion. At once the attention of the trustees of the New York College of Pharmacy was called to facts, a committee appointed, who secured samples of many other preparations, and from this began the first steps to secure a proper examination of drugs, chemicals and pharmaceutical preparations, with power to condemn and refuse their being entered into the country (there was an inspector of drugs, but without power to refuse bad articles). The trustees made a report April 3d, 1845, and on motion resolved "that a copy be forwarded to the editor of the American Journal of Pharmacy for publication, with the addition, that an article has been sold by the importers to the wholesale druggists and is now on the market, as far as the trustees are informed, which comes in stoneware tie-over pots containing 1½ pounds, and is sold as Blue Mass, imported by Cumming, Main & Co., from Wm. Bailey, Woolverhampton, Eng., and supposed to contain 25 per cent. mercury." A sample was sent to Prof. Reid, of the college, who reported "10 per cent. of mercury, besides a considerable quantity of weighty earthy matter, probably, to make specific gravity."

Sig. CONSTANTINE ADAMSON, *Chairman.*
JOHN MEAKIM, *Secty.*

(Am. Journ. Pharm., Vol. 11, p. 4.)

Stated meeting of New York College of Pharmacy held June 19, 1845. On reading the minutes of the board of trustees, the attention of the College was called to the correspondence between Mr. Bailey and the President, whereupon it was, on motion, "Resolved that copies of the correspondence be sent to the American Journal of Pharmacy," and then follows Mr. Bailey's letter stating, "first, I never sold any to that house; second, I am not responsible for any pharmaceutical preparations or chemicals except those which have my stamp, one of which I enclose for your inspection," etc. Sig. WM. BAILEY.

To C. ADAMSON, Esq., President College of Pharmacy, New York.

President Adamson was directed by the Board to convey to Messrs. Cumming, Main & Co. the contents of Mr. Bailey's letter, and then reply as he may judge proper. "In conforming with the resolution, I waited on the gentlemen mentioned above and received from Mr. Cumming the assurance that the Blue Pill Mass did most certainly come from you, being purchased by their house in London, whose firm was Raich, Cumming & Co., now Raich, Main & Co., and that the fact of its being intended for export to New York could scarcely by any chance of probability be unknown to you," etc. The balance of the letter (it is lengthy) which would do any honest man's heart good to read, concludes, "We have hitherto been in the habit of sending to England in confident expectation of invariably obtaining there the most perfect preparations, and we sincerely hope that not only you, but every other chemical manufacturer in that country, will avoid offering us any inducement for repeating similar remarks," etc.

Sig. CONSTANTINE ADAMSON, Pres.

To WM. BAILEY, Chemist, Woolverhampton, Eng.

Page 148. Same Vol. A. J. of P.

EXTRACTS FROM THE MINUTES OF BOARD OF TRUSTEES COLLEGE OF PHARMACY OF THE CITY OF NEW YORK.

"Some 10 cases of opium offered in New York for sale was found to contain not more than 4 per cent. morphine and finally the lot was shipped to Boston. Committee had a notice put in the Journal of Commerce and in the Express," and so, constant trouble was found with imported drugs and chemicals from the other side, in fact, in remonstrating with one of the English houses, the answer given was "The goods are as good as the Americans will pay for." Of course, this did not mend matters in the least.

I find in the American Journal of Pharmacy, vol. 13, page 305, a circular of the New York College relating to the adulteration of drugs which recites that a special meeting of the Board of Trustees is to be held August 9, 1847, for the express purpose of taking into consideration the best measure to prevent the introduction of sophisticated and misnamed chemicals and pharmaceutical preparations. Then follow resolutions "to call upon the secretary of the U. S. Treasury and that he be requested to apply the most stringent regulations within his power to check this alarming and growing evil, and further resolved that the Philadelphia College and other colleges of pharmacy and of medicine be officially requested to unite with us, etc., and in accordance with our instructions, we respectfully ask your co-operation in a general call upon Congress at its approaching session for a law, etc." Then follow two or three pages giving many articles adulterated and spurious, and on page 313 a notice of a special meeting of the Philadelphia College Nov. 1, 1847, with 28 members present. At this meeting a memorial was passed and ordered to be sent to Congress, but no action seems to have been taken by Congress for I find in vol. 24 American Journal of Pharmacy, a call issued by the New York College, for a convention of delegates from various colleges of pharmacy of the U. S. to assemble at the rooms of the New York College at 5 p. m., on Wednesday, October 15, 1851. Delegates from Philadelphia and Boston were present, Maryland College at Baltimore and Cincinnati College not represented, although delegates from each had previously reported. Convention was organized by calling Charles Ellis of Philadelphia as the chairman and Dr. Samuel P. Philbrick of Boston to act as secretary. Committee appointed consisting of Messrs. Samuel M. Colcord, Boston, Alfred. B. Taylor, Philadelphia, as secretary, and George D. Coggeshall, New York, as chairman to aid in the inspection of drugs, etc.

After the business of the meeting was discussed and convention disposed of its business, "the convention respectfully and earnestly recommend that a convention be called consisting of three delegates from each incorporated and unincorporated pharmaceutical society to meet at Philadelphia first Wednesday in October, 1852, when all important questions bearing on the profession may be considered and measures adopted for the organization of a national association to meet every year."

Singular as it may seem, an erroneous decision on a patent-medicine case made at the Custom House, New York, had considerable to do with making the first meeting successful.

Vol. 25, American Journal of Pharmacy, page 89, states "we are glad Dr. Guthrie was disputed because the subject being thrown back on the New York College that institution issued a call for a pharmaceutical convention out of which has grown the American Pharmaceutical Association." It would do us all good, even now, to read the editorial of the American Journal of Pharmacy, Vol. 25, page 282, in its effort to stimulate pharmacists all over our land, not only to make the first call a success but "as well to show our duty to make our nation and our government just what it should be, by united, honest, upright dealings and what should go with it, careful conscientious trading."

And now, after more than sixty years of more or less active contact with our profession, what great changes do I find to have taken place in our business. The time was when we could place an ounce of quinine on our shelves and readily fill the prescriptions of the day without the endless style, shape and forms of pills, elixirs and, as well, the endless catalogues of makers and manufacturers. Our whole country, also, has changed. The faces and men who sacrificed much in time and labor to found the Association have passed away, and those who knew them even by sight are becoming less in number each year as we come to our annual gathering, but the work and labor continues. To me, the men and faces I see around me are evidence of the continued usefulness of our Association, and we all have good reason to believe that for generations yet to follow us, this Association will continue the good work so ably done thus far, and by honest, careful, painstaking work, well and honestly done, will not only continue the good work already begun, but will greatly aid our profession in securing the good will and respect of those depending on us for honest, upright dealing, intelligently rendered and conscientiously given.

Respectfully, EWEN MCINTYRE.

New York, July, 1906.

On motion of Mr. Kremers, the paper was received and directed to be published.

The Chairman: I think we ought to thank Mr. McIntyre for being present and reading this paper. This calls to my mind that at the last meeting held in New York, in 1867, which I attended there were three distinguished pharmacists of New York city pointed out to me as being *the men par excellence*. They were Ewen McIntyre, William Neergaard and John Millhau. They were the three distinct marks of pharmaceutical honesty in New York, and we are glad to have one of them here to-day.

Mr. Lloyd: Mr. Chairman, no other member of this Association could arise here and make the impression upon me that he has made. It is not merely as though he had told us about the past, but here is Mr. McIntyre with one hand holding the past and the other shaking our hand, and it impresses me very differently than if a young man had gone to the books and records and then read to us a paper such as he has given us.

I remember Mr. McIntyre well in New York, and it pleases me to think of the opportunity I had to meet him there, and it pleases me to meet him here. I wish to say that I believe that I voice the sentiment of all of us when I say we consider it a favor to have him come and give us this story, and shake our hand as we have shaken it in the past. (Applause.)

Mr. McIntyre: It is fair to state that Mr. Hancock has been the cause of this paper entirely, aided by Mr. Hynson, and I would like to state here that the young man spoken of in the paper stands before you as the party who bought that package of Precipitated Chalk. Mr. Hynson insisted that I should state that. I was really the party sent there.

Mr. Stanislaus: Mr. Chairman, I am pleased to add to the remarks of Mr. McIntyre in this connection that I have had the pleasure of consulting a book, probably the first book of formulas on perfumery ever compiled on this continent, and it was compiled by Mr. Milhau. He was a very original pharmacist, and making many formulas placed them in a book; there are not less than 1,400 different formulas in it of the tinctures usually employed in the compounding of perfumeries. Among the different tinctures was a tincture of hay. One pound and a half of mown hay dried for at least one week on a wooden floor—he says, "Be sure the floor is clean"—a pound and a half of this chopped hay was macerated for at least seven weeks in 80 per cent. alcohol, and that was one of the tinctures employed in making various perfumes. I presume its value was dependent upon the small percentage of cumarin present. Besides the formulas there were notations at the bottom of the page such as this: "If you want to make perfume real sweet don't forget to put in tincture of hay"; "try tincture of hay," or some such annotation. Another one of the tinctures I noticed was the tincture of honey: two pounds of honey mixed with one gallon of alcohol. That was also employed in sweetening perfumery, and in his laboratory a mixture of equal parts of tincture of honey and tincture of hay, and one ounce of patchouli to four gallons, and one ounce each of oil of bergamot and oil of sweet orange and thirty drops of the oil of bitter almond were the beginning of what is now the cashmere bouquet vended by Colgate & Co., of New York. I believe he was the first man who ever imported into this country an ounce of cumarin, and he paid for that ounce of cumarin the sum of forty dollars. And by-the-way, the spelling of cumarin was "koummarin." In the later formulas, dated say, 1860 to 1865, I found he used a tincture of this cumarin, one dram to the gallon. Evidently it was so expensive in those days he could not employ it any stronger in perfumery.

Mr. Hallberg: Mr. Chairman, I suggest that Mr. Stanislaus procure this formula-book and present it to the Historical Section.

Mr. Stanislaus: In answer to the request of the Secretary I will say that when the Hegeman Corporation purchased the Hudnut store at 205 Broadway this book became the property of the corporation, and I doubt very much whether I could secure the book from the million-dollar drug store. However, if that is the pleasure of the Association I will approach Mr. George Ramsay, my employer for three years, and will ask if he could not secure it for us, or at least procure the loan of it for exhibition in this Section.

Mr. McIntyre: The Milhau interests are entirely separate from the drug store. I could not find anyone who took the interest of the Milhau family, but I do not see why it could not be gotten in that way.

Mr. Hallberg: The next is letters and papers from deceased members, by Mr. Hancock.

Chairman Hancock then presented a number of letters from prominent pharmacists and chemists, members of the American Pharmaceutical Association, now dead, a pill-tile that had been in use by him in his store for fifty years, and various old pamphlets, pictures and price-lists, invitations, etc., all of which were of great interest to the members of the Section and the Association. Mr. Hancock requested the Secretary to read a characteristic letter from William Procter, Jr., on the subject of the ownership of a prescription or formula, and then made some comments upon it.

Mr. McIntyre, of New York, presented his first license as a pharmacist under the first license law passed in New York. He said: The first license fee was $30, and my examination was like this. Under protest I paid the $30 and went in to take the examination. I was met very cordially by the president who shook hands, I was shown a polariscope and walked out the next door and had the paper. That wasn't the worst of it all by any means. The Board brought the State of New York $30,000 in debt for furniture besides keeping the $60,000 they collected while the law was in force.

On motion of Mr. Kremers, the several contributions were received and placed in the collection of the Association.

Mr. Hallberg: The next number on the program is "Collections toward a Pharmacographia Americana." This is the last paper and as soon as we are through with this we will have miscellaneous business, election of officers and adjournment.

Mr. Kremers: One of the principal objects in presenting the subject is to call attention to our method of collecting, and to the fact that practically every member of the Association can contribute to this Section. It is not so much that we should write the history of pharmacy in the next seventy years: we want to collect the material and future generations will write the history. What I want to present is a few collections toward a Pharmacographia Americana, what the Lloyd Library has not done yet. I have not restricted my collections to any particular set of authors. I have taken up the early western travelers and have started on the papers of the Lewis and Clark expedition. I have taken up these because they were edited by the editor of the historical society and I have had access to them. There are no doubt a number of members of this Association who do miscellaneous reading. If they will make a clipping when they do find something of interest such information will materially assist future writers on the materia medica of North America.

I have here a statement on ginseng by Cuming. He mentions a number of drugs and among them ginseng. I have also another statement concerning ginseng, and in a work published recently I find quite a lengthy account of ginseng. A most interesting feature of an article I have here is that it points out the means of communication between the seaboard towns and Pittsburg and also as far as Lexington, Kentucky. It was carried on by horse and wagon and the freight was so expensive that there were only two articles from the interior that went to the seaboard town, for they couldn't afford to pay the freight. In that connection I have here the account written by one of the Jesuit Fathers, who was a missionary in Canada and the Royal and Prince Islands, of the discovery of ginseng, and his original plate which shows how he described it. I simply use this illustration of ginseng so that if you would all make a record of what you run across, by-and-by we will get together and have an authentic account of these drugs. In connection with the Lewis and Clark expedition we have an authentic account of the drugs used by the Indians. It is interesting. I hope those of you who read, will hereafter collect this kind of information.

Mr. Oldberg: I would like to ask whether the original rough draft of the first governmental order making the use of the metric system compulsory would be of value? There are some features in connection with it that are rather interesting. A crank who was in favor of the introduction of the metric system wanted the government to order its introduction in the Marine Hospital Service. They were afraid of it; didn't think it would be at all popular; but as that crank happened to be the chief clerk in his office and knew the Secretary of the Treasury fairly well, he said, Suppose you go and see the Secretary and ask him what he thinks of it. It was John Sherman. When a rough draft was made of such order as was desired on a double sheet of foolscap, one-half torn off, I took it over to Secretary Sherman and asked him if he would sign such an order if presented. The custom of the department was to write out all such orders in a very formal, clean way, and the regular routine would have been for the Surgeon-General of the Marine Hospital Service to check it up, and the next step would be to take it to the Chief Clerk of the Treasury, and then to the Second Assistant Secretary of the Treasury, and if he approved it and added his initials then it would go to John Sherman. In this case the order was just reversed and a very rough draft, which I have in my possession, was shown to Secretary Sherman and he asked, "Well, does it affect anybody but the medical officers?" I said "No." He approved it and then I took it to the Second Assistant Secretary and he put his initials on it, then to the Chief Clerk, then back to Surgeon-General Woodworth. He said "No" and then signed it. This original rough draft is in my possession. That was in 1878. A couple of years later the medical department of the navy followed the example, but the army is rather slow to adopt it.

Mr. Hallberg: I move that the presentation made by the Historian be received and referred.

It was seconded and carried.

Mr. Kremers: I should like to submit the following resolution:

Resolved, That the Historical Section request the Council to consider the advisability of asking one of the other sections to make an exhibit at the Atlantic City meeting of the American Medical Association in 1907.

We have another invitation to make an exhibit, and I do not think the Historical Section should be asked again. I think it is to the interest of the Association to consider the matter.

The motion was seconded and carried.

The Chairman: I would like to ask the Historian if he has a complete set of the Pharmacopœias.

Mr. Kremers: No, we have not; the Association has not.

Mr. Hallberg: I desire to call your attention to the fact that the time for adjournment is past. The next order of business is the election of officers.

Mr. Wilbert: Mr. Chairman, I would like to place in nomination Mr. Ewen McIntyre, of New York City as Chairman.

The motion was seconded.

Mr. McIntyre: Gentlemen, your presiding officer gives the most substantial and reasonable reason why I should not be put in that position—his age and occupation. It would apply far stronger to me. Put young men in for the active work. Do not put in the old horses. I will do all I can to aid you, but really and truly I am not a good presiding officer. I am not cut out that way. I am not built for it.

The Chairman: I would like to remind Mr. McIntyre that he is more comfortably situated. I am in business, working hard every day. This would be a pleasant recreation for him.

Mr. Wilbert moved to proceed with the regular order of business, and nominated Mr. E. G. Eberle, of Dallas, Texas, for Secretary.

The motion was seconded.

Mr. Ebert placed in nomination for Secretary Mr. Howell.

The Chairman: We have two good nominations. I think it would be a good plan to move that the nominations be closed.

Upon motion of Mr. Wilbert, duly seconded, the Secretary was instructed to cast the ballot of the Section for Mr. McIntyre for Chairman of the Section.

Upon a similar motion by Mr. Stanislaus, the Secretary was instructed to cast the ballot of the Section for Mr. Eberle for Secretary.

Mr. Wilbert: Mr. Chairman, I would move you that Professor Kremers, of Madison, Wisconsin, be put in nomination as Historian.

The motion was seconded by Mr. Ebert.

The Chairman stated the motion, and it carried.

The Secretary was instructed to cast the ballot of the Section for Mr. Kremers as Historian.

Messrs. McIntyre, Eberle and Kremers having been declared by the Chairman duly elected to the respective offices of Chairman, Secretary and Historian for the ensuing year, the meeting, upon motion, adjourned.

SECOND SESSION (MEMORIAL)—FRIDAY EVENING, SEPTEMBER 7, 1906.

The Memorial session of the Section on Historical Pharmacy was convened at 8:30 p. m., with Chairman Hancock presiding.

The Chairman announced the object of the session to be to pay tribute to the memory of two departed members of the Association, distinguished in life for their good work in pharmacy and their sterling worth as men and citizens. He said the first name to be considered was that of the late George W. Sloan, a resident of the city of Indianapolis, and at one time President of the American Pharmaceutical Association. The Chairman proceeded to pay his own spontaneous tribute to the memory of Mr. Sloan, whom he described as a pharmacist of recognized ability and a man of great goodness of heart and pronounced public spirit, qualities that combined to make him one of the most substantial and useful members of society and of the civic government of the city of his residence. He said the Secretary (Mr. Hallberg) would read two papers on the life and character of Mr. Sloan, one written by an old clerk of his, Mr. Winfield S. Lynn, and the other by the Local Secretary of this meeting, Mr. Frank H. Carter, both of Indianapolis.

The Secretary presented these papers as follows:

A TRIBUTE TO THE MEMORY OF GEORGE W. SLOAN.

To many it was always George, but to me it was Mr. Sloan. Not that he was distant in his manner, because there was no man more approachable, genial and kindly, but there was a respect for his ability and quiet modesty which precluded even the appearance of familiarity.

My acquaintance and knowledge of him extended over a period of about thirty-five years, and was continued to the day of his death. In all of that time his qualities for bettering his fellow-man grew upon me to such an extent that I feel that the good name he left was better than great riches, and in his passing away I, with many others, have met with great personal loss.

During his long life amongst us his name was a household word in anything relating to drugs, and druggists considered him an authority on all matters pertaining to the profession. All could go to him with their knotty propositions and troubles and his unselfishness was such that his store of knowledge was free to all. His manner was such that none felt belittled in asking his advice and counsel, and his stand was for the right.

Among the many memories of him which will remain green is that of our journeying together to the Fiftieth Annual Meeting held at Philadelphia, September, 1902. His great love for his profession, and the many brethren he expected to meet there, pervaded his whole being and proved a great blessing and satisfaction to him.

In the many positions he held in pharmacy, Masonry, the church, the schools, and in his daily association with his brother druggists, no name stands higher to-day than that of George W. Sloan.

FRANK H. CARTER.

Indianapolis, September, 1906.

INDIANAPOLIS, IND., *Aug. 20, '06.*

MR. JOHN F. HANCOCK, *Baltimore, Md.*

Dear Sir: Your letter of recent date to hand asking me to write, concerning my connection with the firm of Browning & Sloan, and of the late Dr. Geo. W. Sloan. It is with pleasure I write a few lines, and bring back those happy days of our long association.

I went to Mr. Sloan's store Aug. 25, 1862, and at his death was left the oldest drugman of continual service in the city, and the only clerk of the many that went clear through his partnership with R. Browning.

I soon found that in Mr. Sloan I had a trusted friend, and picked him out as my instructor. You well know that boys have lots of questions to ask; he was always ready and lent a listening ear, and the result I never went wrong from his information. He was a good instructor and with patience and kindness he would bear with me, and I profited greatly therefrom.

He took the same interest in everything that he did in pharmacy, and no words of mine need to tell of his national reputation. He was a busy man, President of the School Board and Board of Trade and on the State Board of Pharmacy.

His influence among us boys was good, some 7 of us went in his Masonic Lodge, and delighted when we could vote for him for Treasurer, which place he held 25 or more years. Several of us joined the A. Ph. A., and when found all could not attend we withdrew so he could always represent the store, and we were always glad to be represented by such a good man who reflected such credit on the store.

The plain life of Mr. Sloan is well worthy of imitation, his love of his work in pharmacy, his unselfishness towards his fellowman, his patience and endurance among those under him has made us feel proud of the long service in his store. His untiring efforts to have a pharmacy law enacted were crowned by success before he died.

His goodness of heart was shown one time when a clerk died that lived in Ohio: three from the store were at the funeral, and the firm sent his poor old mother $300.00 as a remembrance. Mr. Sloan was always ready to do good among his fellowmen.

Only six of the original eighteen are alive, and we stayed with the firm from ten to thirty-five years. I the latter.

In 1864 our store felt proud to see Mr. Sloan as a lieutenant march to the front in the war, as the store furnished four officers, and on his return we stayed up until 5 a. m., waiting for the regiment to come home. All through the twenty-five years I was with him I always found him cheerful and ready to help us, and do more than his share of the day's work, which some days was very heavy.

Many of our younger druggists of this city owe to Mr. Sloan's memory a debt of gratitude which we can never pay, only to do our duty and show by his good influence that his instructions have been good. By so doing the memory of a good name and the application of his teachings will show at least some gratitude.

I am one of the six that are left of the eighteen, and I hope ever to keep green his memory.

Since you met here last you will find a great change in the city; still I join in with other citizens and pharmacists in giving you a good welcome. The city will be yours, come and enjoy yourselves.

Truly I am yours,

WINFIELD S. LYNN.

The Chairman, further commenting on Mr. Sloan's admirable qualities, said he was one of the best-posted men in the history of the city of Indianapolis that could be found, and took great interest in civic affairs. He was much beloved by his friends, and was ever ready to sympathize with them in trouble and rejoice with them when they rejoiced. He said Mr. Sloan had left a historical sketch, entitled "Fifty Years of Pharmacy," which he had had the good fortune to come into possession of a short time ago, and which he intended to present to the Section, but found he had been forestalled by his friend and predecessor in the office of Chairman, Mr. Albert E. Ebert, of Chicago, who had not only presented this work to the Section, but also an account of the memorial services held some months after Mr. Sloan's death, at which time the church was crowded by his friends gathered there to do homage to his memory. He said there were some gentlemen present who had known Mr. Sloan well, and he would call on some of them now to give their personal recollections of him.

Mr. Ebert was the first speaker, and he read the following as his tribute to the memory of Mr. Sloan:

GEORGE W. SLOAN AS A PHARMACIST.

BY ALBERT E. EBERT.

George White Sloan was the greatest pharmacist of Indiana. Professionally he represented all that is best in pharmacy. He was one of the old school, now all but passed out of existence, and his fifty-five years in the profession made his life a connecting link between the infancy and the maturity of pharmacy in this country.

When thirteen years of age he entered the drug store of his uncle in Indianapolis and applied himself studiously to the business. After having served as apprentice and clerk until he reached his majority, he felt the necessity of further knowledge, and therefore entered the Philadelphia College of Pharmacy. While a resident in the City of Brotherly Love it was his good fortune to become associated with Professor Edward Parrish, under whose influence the professional bent of his mind was doubtless greatly stimulated, for we find that in 1857, at the annual meeting of the American Pharmaceutical Association at Philadelphia, Mr. Sloan, on the invitation of Professor Parrish, became a member of the organization, and from this time throughout the rest of his life he was one of its most useful, constant and faithful supporters.

In recognition of his ability and his distinguished loyalty, Mr. Sloan was honored by the Association by being chosen president on the occasion of its twenty-seventh annual meeting at Indianapolis just twenty-seven years ago.

In his presidential address at the Saratoga meeting one year later, President Sloan brought out, among many other useful recommendations, the fact that the indigenous medicinal plants of this country are rapidly disappearing beneath the onward march of civilization, and recommended means for preserving and cultivating these plants for the benefit of mankind in the future. We do not know whether these suggestions at that day have borne directly upon the present efforts of the Department of Agriculture of the United States and of individuals in this direction, yet the suggestion first publicly made by Mr. Sloan may have been the seed which finally brought forth the present fruit.

On his return to Indianapolis from his studies at Philadelphia, Mr. Sloan became a partner in the firm of Browning & Sloan, being in reality the active manager of the business. This firm continued in the wholesale and retail business until 1886, when Mr. Sloan organized the retail firm known as the Sloan Drug Company.

In all the years during which he was engaged in the drug business Mr. Sloan never lost sight of his professional duties as a pharmacist. In addition to his valuable services as a member of the American Pharmaceutical Association he was a prime mover in organizing the Indiana Pharmaceutical Association; was an active member of the Indiana State Board of Pharmacy; filled the chair of Pharmacy in the Indiana Medical College; performed distinguished services as a delegate to pharmacopœial conventions and as a contributor to several of the decennial pharmacopœial revisions, and was in 1900 elected a member of the Board of Trustees of the United States Pharmacopœial Convention, and for his distinguished services to Purdue University he was made a Doctor of Pharmacy by that institution.

Aside from his multiform business and professional duties, he contributed valuable articles to the pharmaceutical press, all of his work being characterized by a high tone and an intimate and practical value to pharmacy.

As a Trustee of the Pharmacopœial Convention the work of Mr. Sloan was of the highest value. He was quiet in his methods, his mind was well balanced, he was thorough and analytical, and his conclusions were always well considered and almost invariably sound.

As a friend he was steadfast and unselfish to a remarkable degree. He never pushed himself forward, never sought applause, but throughout his whole life he was a man whose loyalty, sense, judgment and good faith were always to be relied upon with absolute confidence.

It takes nothing from the fame of the many splendid men in Indiana pharmacy that the American Pharmaceutical Association has dedicated this session to the memory of George W. Sloan, nor does it detract from the applause due other men for us to say that he was the greatest pharmacist this State has yet produced and to be numbered among the great pharmacists of the United States.

Chicago, August, 1906.

The Chair stated that Mr. John N. Hurty, of Indianapolis, had prepared a paper giving his recollections of Mr. Sloan, but unfortunately he was called away from the city by news of sickness in his immediate family, and he would ask Mr. F. W. Meissner, Jr., of La Porte, Ind., to read this paper.

Mr. Meissner presented the following:

GEORGE WHITE SLOAN.

BY J. N. HURTY.

George Sloan was first of all a good citizen. He was a useful man in the community in which he lived. He found time to help others and he took a deep interest in the affairs of his State and home city. Indianapolis is debtor to George Sloan on account of a score of suggestions which did much to lift her up and to move her onward. It may modestly be said that George Sloan was in a degree a Benjamin Franklin in this community. He did some work here, not unlike that done by the unusually gifted philosopher in Philadelphia. He was constantly suggesting improvements.

Oftentimes when the City Council was in session, the frank, intelligent face of George Sloan could be seen among the visitors. But he was not there setting up a job against the people; not there seeking a petty position, a sinecure like so many of the crowd. He was not laying for a contract and pursuing questionable methods to make money off of his neighbors. But, not unlike Benjamin Franklin, he was there to offer suggestions as a good citizen to help on his community. He gave much attention to the subject of shade-trees. He studied arboriculture, and from time to time modestly told the public what he thought should be done in the way of planting shade-trees. Later, he advocated parks, spending not a little time in surveying the surrounding country with the park idea in his mind. I remember distinctly one plain, quiet talk he made before the City Council, urging action encouraging the planting and care of shade-trees. His arguments were forceful on account of the quiet manner and evident sincerity of the man. He was asking nothing for himself, only striving to help the town onward. The question of sidewalks and street-paving interested him. For years, while Washington Street, Pennsylvania, Illinois and other central and much-used thoroughfares were a succession of ruts and mud-holes, George Sloan was persistently talking good streets. He knew the merits of Nicholson block, of Belgian block, of brick and

Macadam and quietly sought opportunity to tell what he knew. He was one of the prominent forces which started Indianapolis in the upward way.

When President of the Board of Trade he appeared at the head of a committee from that body before the City Council, to discuss sewers. He evidently saw plainly that Indianapolis would grow to be a great city. He made clear how health and decency, and how all that goes to make up a real city, demanded the separation of people from the wastes of life. A plain proposition now, but not so plain then, and still dark to many cities and towns of this State. He advised that a skilled sewer engineer be employed to lay off the whole town in a comprehensive sewer system ; and then build it as rapidly as conditions would permit. A simple and common idea in these times, but it had not struck in then. His advice was not followed until years after and not until the self-styled practical men of the Council had wasted large sums in constructing sewers from the wrong place to nowhere. He called attention to the simple fact that the prevailing winds in the winter-time in this region were from the southwest, and that the sewer plans under consideration contemplated that the great open mouth of the main sewer would look into the face of these winds. The result would be the driving of sewer gases at times back into the houses. His advice was not taken, and the trouble he predicted was realized.

He was a pharmacist of both the old and new schools. He began his work in those old days when the apothecary existed, and continued until the days of the manufacturing pharmacist. He knew what it was to powder opium, mandrake, nux vomica and other drugs with a great iron bell mortar and pestle, the mortar covered with leather to keep down the dust, which it did not do. As for blue ointment and blue mass, he insisted he had spent at least one year of his life making them by hand. "Did you ever churn with an old-fashioned churn?" he once asked me. "And did you ever have the experience of a slow cream, a cream which just would not yield up its butter?" "Cream which the more it was beaten with the dasher, the thinner it got?" "Well," said he continuing, "I have rubbed and churned and beaten fat and mercury, and confection of rose and mercury, for days, in order to extinguish the mercury." "At one stage in my drug career I seriously contemplated running away because of discouragement attending the extinguishing of mercury. The job very nearly extinguished me."

We all know of George Sloan's great success as a real pharmacist. It was conscience, determination, persistence and honesty, the combination which makes character and composes ability which made him a success.

The Chair next called on Mr. John Uri Lloyd, of Cincinnati, an old friend of Mr. Sloan's, to make a few informal remarks, and Mr. Lloyd spoke as follows :

Mr. Chairman, an informal word, in a meeting such as this, is a melancholy privilege, a sorrowful satisfaction. We have been told in print about the work of George Sloan. But we pharmacists who knew him in pharmacy know more than the books record. Mr. Hurty and these other gentlemen have also told well the story of his life; and as I look back, it seems to me as though those things that seemed of little moment as we passed along, stand out now as incidents in the life—in the sunshine of the life—of Mr. Sloan. I would say that this work that he did in his life-profession, pharmacy, was performed as a loved duty. But the better part of his life was cast outside of his life as a pharmacist. It was his home life, his work in this beautiful city that he loved so well, where nearly every child knew him. Here, as a pioneer, from nearly the beginning of his life, he served the people of his loved city.

Mr. Chairman, it seems to me that when a child is born a new sun rises, and this new sun goes with that child until he drops into the grave. It is the light of the life of the little child, and it goes with him from childhood into manhood, and from manhood into old age. We who see that little child as it passes along catch gleams of the sunshine that has risen with that child, and through its glow we see the child's real features, we come to know its nature, and we become impressed with the lights and shadows of the child's mind and character. Much as we have seen the sun rise and bring to light a mountain-chain, and, in passing over it, show every inequality, and shadow and rock and precipice; and then, as the sun goes down, these things fade from view. But in the evening's glow, silhouetted against the western sky, stands a peak of the mountain-chain, carved as though it were cut out of a single rock. The sun shines now on the other side.

And so it is with George Sloan. The sun that was shining on the human side of his life is set; but he is yet in the sunshine. We now see the silhouetted form of George W. Sloan, he is where the sun is shining.

In every human heart there are silhouetted forms of loved ones gone. We, of the American Pharmaceutical Association, have more than one covered in the bright beyond; they stand together, in the sunshine of their lives they beckon us from afar. George Sloan is of them, and the time is not far distant when some who are here to-night will be silhouetted against the western sky; the sunshine of their lives—so far as we can see—will be set; but they will be in the sunshine beyond.

He who says a man can die thinks not of what he says. The light that comes and the sun that rises when they are born will never die. Listen. When the city of Indianapolis has passed away,—the material part of it, the part that George Sloan knew as Indianapolis, and which the people who lived when George Sloan lived knew, as this city of Indianapolis; when these buildings are torn down and new ones erected in their place, or be it razed forever—the work of George Sloan will be passing along in the channel of human life. The deeds of a good man flow onward until to mankind time shall be no more.

Let me in closing again thank the Chair for giving me the privilege of making these informal remarks in behalf of a friend to man and to men.

On the close of Mr. Lloyd's remarks the Chair announced that there were others present who could pay eloquent tribute to the memory of Mr. Sloan, but time forbade, as there was another whose great work for pharmacy and high consecration to duty deserved consideration at this time. He referred to William Procter, Jr., the Father of American Pharmacy.

Mr. Joseph P. Remington, of Philadelphia, was first called on to give his recollections of Procter, and the Chairman graciously referred to Mr. Remington as one upon whom the mantle of Procter had fallen and been most worthily worn. In the meantime, the Chair said he would like to pass around among the members a picture of Procter, taken only a short time before his death.

Mr. Remington, before presenting his paper, said he wanted to say that he had been requested to prepare his paper in lighter vein than most of the reminiscences of Procter, which he was perhaps the better fitted to do on account of his intimate association with him when a young man. He also spoke of the movement on foot at the present time to erect a monument in Washington to his memory.

PROCTER REMINISCENCES.

BY JOSEPH P. REMINGTON.

Much has been said and written of William Procter during the last decade, and the historical incidents of his life have been well portrayed, but the continued interest in the man who has been called the "Father of American Pharmacy" has been so great that at the request of the President of this Association the writer has collected some personal reminiscences in a lighter vein of this noted pharmacist which he hopes will prove interesting.

In person William Procter was not tall, nor would he be considered under-sized; his height was probably five feet eight inches. His frame was well nourished, and he would not be called a thin man nor would he be termed stout; his walk was quick and firm, and at first sight one was impressed with his abundant straight, black hair. On scanning his features, his piercing black eyes seemed to read one through and through; every line of his face denoted strength of character; his nose was that of a courageous man, his mouth firm, and the chin and jaw of good proportions. When demonstrating behind the lecture counter one was immediately impressed with his quick manipulation and thorough attention to every detail; he loved to work his hands; he had excellent mechanical ability and could devise apparatus, and he delighted in contriving and designing furniture for his store.

His industry was tremendous. During the whole time of my intimacy with Professor Procter, seeing him every day or so, I never saw him read a novel, nor taking what most men would regard as needed relaxation. Of course he no doubt had his moments of relaxation, but these were never taken in the drug store or at the college. His manner in the store towards customers was well nigh perfect; his first thought was to always accurately ascertain what the customer desired. In my mind's eye I can see him leaning forward over the counter, with a pleasant, kindly expression, asking the customer more than once what it was they wanted.

The impression on the mind of every one visiting his store was that of perfect confidence in the proprietor. The physicians of Philadelphia went to his store continually for advice; even patients in the outskirts knew where Procter's drug store was, and no amount of expense or trouble was spared by William Procter to gain the confidence of the physician, and to aid him in selecting the best preparation for his purpose.

William Procter on account of his growing business found that he could not attend to his college duties, and to his work on the American Journal of Pharmacy, without having a reliable assistant at his store at Ninth and Lombard Streets. This need he supplied by engaging David Preston, a graduate of the class of 1864. The partnership or interest of Mr. Preston continued during the life of William Procter, and after the death of the latter, David Preston and Wallace Procter, an only son, continued the business.

The drug store was arranged like many of the older Philadelphia drug stores, with the prescription counter near the front of the store, where the soda-water fountain is usually located to-day; the back part of the store was elevated somewhat, for one had to ascend two or three steps to reach it. In the southeastern corner of this apartment was a small desk, and perched on a high stool, William Procter penned those masterly pharmaceutical papers for the American Journal of Pharmacy; he had great powers of concentration, and he was able to overlook the business of the store, and at the same time do his work with the pen.

When Emil Scheffer published his splendid results from the pepsin research, Procter took a great interest in it, and much correspondence ensued; soon after he decided to enter into the manufacture of saccharated pepsin, and Procter's pepsin came into the market, and at one time had a large sale.

If William Procter had not been so devoted to Scientific Pharmacy he could have easily founded a pharmaceutical laboratory, which would have had a large business, but in reaching out for larger financial returns, Procter was very timid. As has often been said of him, his modesty where his own achievements were concerned, was oftentimes painful to his friends: he never sought greatness in these paths. He preferred to plod along, doing his duty as he saw it each day, with persistence and faith, content to the best of his ability to do his part.

Professor William Procter was one of the founders of the American Pharmaceutical Association, and was its tenth president.

The first meeting of this Association that the writer (whose age was then 20) attended, was in 1867 in the City of New York. The impression of that first meeting is very vivid. It was the custom in those days for the local members to invite the visiting members to their homes, and the writer at this time was employed by Dr. E. R. Squibb, and a member of the doctor's family.

The first meeting at the breakfast table was one which was full of interest, for the doctor always gathered in his large house on these occasions his particular friends. On the doctor's right hand sat William Procter, and on his left, Samuel M. Colcord of Boston; next was Dr. Henry T. Cummings of Maine. Next to Professor Procter sat Professor G. F. H. Markoe. The other members who were present have escaped my memory. But the older members of this Association who knew these veterans (not one is with us to-day) can conceive that there could not possibly be five men more dissimilar in appearance, habit of thought, and mental attributes and characteristics.

Markoe made himself felt everywhere, and at all times; he was always boiling over with enthusiasm and geniality, his hearty laugh could be heard above all the others. Samuel M. Colcord, known by all his friends as "Sam," had more dry humor bottled up in his cranium than any other man in the Association that I ever knew. A great deal of the fun evolved by Markoe consisted in the manner of his delivery: he would begin to cachinnate five minutes before he told his joke.

Colcord, on the other hand, never smiled when his brain was fomenting. Markoe would be convulsed in advance with suppressed enjoyment of his effort. Colcord would be as calm as he would be in church. With Markoe one was led to laugh by the infectious buoyancy of his spirits and his manner, and you would laugh with him, and at him, and often not at his joke.

Dr. Squibb was always a splendid host, he knew exactly how to touch the springs, he would give a quiet suggestion to Colcord, and hold back Markoe, and keep the whole company entertained. Procter would sit still and enjoy every minute of the talk and badinage; he had a keen sense of humor, but very rarely told a joke.

Dr. Cummings never smiled, and it struck the boy at the table as the most remarkable case of lack of appreciation of humor in a man that he had ever seen. In a few moments, however, it was explained. Mrs. Squibb turned and said quietly to the boy, "Dr. Cummings is stone deaf." A few moments later this became very apparent. Colcord, as soon as he could get the floor, started to tell a good one on Cummings, notwithstanding that they were touching elbows at the mahogany. Colcord's story was, that when Dr. Cummings went to Cincinnati at the meeting in 1864, he was invited to stay at the house of W. J. M. Gordon. When he retired at night he was ushered into a room, and the most striking object was the bed enveloped by a canopy mosquito-netting. The appointments of the room were evidently new to Dr. Cummings, who hailed from Maine, where mosquitoes at that time were not very abundant.

The next morning when the guests assembled in the parlor before breakfast, Colcord, raising his voice to the highest pitch so as to be heard, asked the doctor "Whether he had a comfortable night." Cummings, taking him by the arm, led him over into a corner where the rest of the guests could not hear well, and confided to him that he hadn't slept a wink, and added, "Why in the mischief do fashionable people surround their beds with such tomfoolery?" "Why," said Colcord, aghast, "I don't know what you mean." "Why all that flummery stuff on the bed. I couldn't get rid of it, for I couldn't get it up, down, or aside; it wouldn't unhitch, so I had to sleep on it, and I never felt mosquitoes so bad in all my life: they plugged me all night." Of course Colcord explained the proper use of the mosquito canopy, and told him that it was there for the very purpose of keeping the mosquitoes away, and he should sleep under it. It can well be imagined that Colcord never saw Cummings afterward without asking him whether he had any more experiences with mosquitoes. Dr. Cummings was a sterling man, a pungent writer on pharmacy, and was alwaya one of Dr. Squibb's firm friends.

William Procter in a business or scientific meeting of the Association was a study worthy of emulation. Every one listened to every word he had to say. He knew how to choose his opportunities and was never one of those to be heard at all times on all questions. On scientific and educalional subjects he was at his best.

His editorship of the American Journal of Pharmacy kept him abreast with the times. He knew what was going on, not only in his own country, but in Great Britain, France and Germany. It made no difference whether the debate in the meeting was on the condition of pharmacy in general in these countries, or whether the process for a fluid extract, or the formula for a pill or suppository came up for discussion.

In debate he was earnest and convincing, rarely using gestures, and his voice while not loud had good carrying power. What particularly impressed his hearers was the fact that every one knew that William Procter never spoke without having something to say. Rhetorical flourish was entirely absent. He was always serious, and his aim was never to use an unnecessary word. He had much influence in the Association in naming officers, being an excellent judge of men, and knowing which of his associates would fill the various positions, because he had studied their characters and the character of their work. His opinion was sought by his colleagues on these occasions, and he never declined to speak his mind freely, for he believed in straight-forwardness and plain speaking.

I never heard of his seeking for a position of honor or trust ; these came to him naturally and without the slightest effort on his part, and when a position was tendered him which he thought he could not fill, his words were unmistakable and his "No" final.

It must not be surmised that William Procter never failed in having the Association pass the motions and resolutions which he offered, but it should be said that after a full and free debate his motions and resolutions were nearly always adopted, for the Association early in its history recognized Procter's ability, and had unbounded faith and confidence in his honesty of purpose and loyalty to the best interests of the Association.

As a lecturer William Procter did not shine with the same brilliancy that he did as a writer. He never sought to brighten any subject by flashes of humor or a digression from the subject in hand. He lectured from copiously-written notes which were filled with interlineations. As his successor in the chair of Pharmacy his note-books were presented to me, and they proved a most interesting study ; he always sought to give the student the latest information on the subject of the lecture at his command. He had no sympathy with the careless or unruly student. The lectures being held in the evening, and as most of the students came after a hard day's work in the store, they would be ill prepared to listen to dry statements of pharmaceutical facts. It would not be strange under these circumstances if heads were seen to droop and occasionally a gentle snore would divert attention from the subject of the lecture. On these occasions Procter would stop talking and direct his piercing gaze upon the culprit ; as frequently happens the cessation of the sound of a voice and an unusual stillness in a room is sufficient to awaken a sleeper. If this were not sufficent to arouse the sleeper one of the students would sometimes, not too gently, call the attention of the sleeper to the fact that he was asleep. When the drowsy head appeared with eyes half open, great applause upon the part of the class would keep the man alert and awake for the rest of the lecture. It must not be supposed that Procter's lectures were uninteresting ; they were full of meat, and those who wanted to learn had no difficulty whatever in absorbing knowledge. He had a systematic and orderly way of grouping facts, and his lectures were well illustrated with experiments ; he always took hours to prepare his experiments beforehand. He was never known to add hydrochloric acid to a test when nitric was the one intended.

He was exceedingly sensitive to the opinions of the students as to the value of his lectures, and any disrespect in the lecture-room was immediately resented ; he would invite a student to leave the room if he heard a remark which was in the slightest degree disrespectful, and very few liberties were indulged in by the students at a lecture by Procter.

Like all lecturers he had a few peculiarities which the students soon recognized. One was the dropping over on his forehead of the forelock of his jet-black hair, and the students used to watch for the quick motion of his hand to his forehead as he threw it back into its place. But it was after the lecture when the charm of his personality was realized. There was always a knot of students collected at the end of his counter to ask questions. The painstaking care by which he sought to remove all difficulties, the pleasant smile upon his countenance, and his parting question to the student, "Are you sure that you thoroughly understand?" gave him a power and an influence which nothing else could.

Procter could not be called a fluent lecturer, but he was a born teacher, and never failed to command the highest respect and love from the students.

As a writer, William Procter was at his best. Any one who will read the mine of information contained in the American Journal of Pharmacy from 1844 to 1874 and glance through the subjects that occupied his attention, must realize that there was his greatest monument. His style was simple, direct and forcible, with no attempt at ornamentation, he was diligent in scanning the foreign journals for new contributions and researches, and if papers were sent for publication and the writer consciously or unconsciously drifted into heresy, the editorial note of dissent would almost invariably be found in a footnote at the bottom of the page, always courteous, but often displeasing the writer. But Procter's love for truth and accuracy, and his fear that some one would be misled by the statements emanating from the American Journal of Pharmacy was so strong, that he braved the displeasure of some of his contributors. If the subject in question was a practical one like the formula of a new preparation, he would seek his laboratory at once, and experiment and lay the results of his work before his readers.

It was not in William Procter's nature to hurt the feelings of any one. No matter how humble in walk such a one's occupation might be, he would often write a little note to a contributor couched in the most kindly language, informing him that his process was defective, or his formula was not new, or that the time was not propitious for exploiting some grand notion for elevating Pharmacy.

I am aware of the fact that some of Procter's contemporaries called him brusque and headstrong, but an intimate knowledge of his attributes would show that he was full of tact, and that he had masterly judgment.

In the latter years of Professor Procter's life he acquired a property at Mt. Holly, New Jersey. A beautiful spot, and probably the happiest days in his life were spent with the plants and trees that he was raising. He did not claim to be a botanist, of course, but nevertheless he had an excellent working knowledge of plants and he loved them. Many of the trees which he planted are flourishing at this time at Mt. Holly, and some effort should be made to preserve them.

In 1866, William Procter, on account of failing health and the pressure of other duties, resigned his position at the Philadelphia College of Pharmacy, but he continued his active interest in everything connected with the College, and in 1872, upon the death of Edward Parrish, his successor, he was prevailed upon by the officers to again occupy the chair. This he continued to do until 1874.

In the winter of 1873 and 1874 his friends observed that the heart trouble from which he was suffering was rapidly undermining his strength, and I found him more than once on the landing of the college steps hesitating about mounting a dozen steps more to reach his lecture-room. The evening of his last lecture, on Feb. 10, 1874, was an occasion long to be remembered. The lecture was upon the subject of the drugs from the animal kingdom, and I remember that lactic acid and sugar of milk were two subjects which he discussed. He made ferrous lactate before the class, and I have in my possession the last preparation that Procter made.

From 1872 to 1874, I enjoyed the great privilege of assisting him at these lectures, and on this last evening he was particularly cheerful. There was not the slightest sign, apparent to a stranger, of illness or lack of vigor. He had frequently referred to the fact that this was the last course of lectures that he would deliver, and when the lecture was over, he turned to me and said, "Well, I have only three more to finish," and on reaching the street he turned to get into the Tenth Street car, bidding me a cheery "good-night."

At five o'clock the next morning, a messenger from Ninth & Lombard rang the night bell to tell me that William Procter had died suddenly in the night.

If these few personal reminiscences of this eminent "Father of Pharmacy;" this toiler and pioneer who blazed the way; this honest man, "the noblest work of God," will serve in the smallest way to aid in keeping alive the memory of one to whom we all owe an everlasting debt of gratitude, the writer's object will have been accomplished.

Secretary Hallberg then read a contribution from the pen of A. P. Sharp, of Baltimore, senior member of the firm of Sharp & Dohme, who, the Chairman said, was an intimate friend of Procter, and entertained him at his home when he visited Baltimore:

As one of the oldest associates of Wm. Procter, our acquaintance commencing nearly sixty years ago, I deem it a pleasure to refer to some incidents of his lifetime. With truth I can say he was one of the most modest, unassuming men, to be master of so much information for those seeking pharmaceutical knowledge and its kindred branches of science, I have ever known; and I speak from an intimate association of many years. He was a person that had nothing to conceal, and whenever I was at a loss for information he was always ready with a willing pen or word to give the desired information. Indeed it seemed to be his greatest pleasure to be useful on this line; hence I always felt free to seek him when needed. When in Baltimore it was always my pleasure to have him as a guest. The last time he was in the city we took a long walk over his boy day's ramble and he called at the house he was born in on Cathedral street near Howard, a small, two-story, stone house that has long since been removed. In our walk I found he was compelled to stop and rest his heart, which was alarming, as his suffering was plainly seen. During our walk he pointed out alongside of the race flowing from the dam under the old Belvidere bridge quite a patch of cicuta (Conium Maculatum) growing wild. He was very fond of botany and would frequently stop and examine a flower that he was not familiar with. About that time the Maryland College of Pharmacy was reorganized and he took a great interest in it, and although the only living member of the first class, he told me something I never knew before; that it was the first college that had a professor of Pharmacy. He was one of the most refined gentlemen it has been my pleasure to have been associated with, and his conversation and jokes were such as could be spoken in any society, male or female, and I enjoyed them very much, especially one told about our mutual friend, Dr. Squibb of Brooklyn. He can well be styled the father of modern pharmacy for in his early days pharmacy was at a very low ebb and his industry and knowledge soon brought it to its present standing, and every pharmacist owes much to his efforts in making it a science. In using the displacement process instead of the old method of digestion he was an expert and much has been learned from him, of great value to the retail pharmacist as well as the large manufacturer of modern times.

A. P. SHARP.

Baltimore, August, 1906.

The Secretary also read the following paper by Mr. Oldberg, of Chicago, giving his recollections of Procter:

My acquaintance with William Procter Jr., began in 1869, when, as editor of the American Journal of Pharmacy, he corresponded with me about a short sketch of the drug business in Sweden, which I contributed to that publication. I met him at the annual meeting of the American Pharmaceutical Association at Richmond in 1873, the first I ever attended. Lasting impressions of Procter's kindly nature, and his deep devotion to high ideals were left with me. I have never forgotten his earnest protest in the Annual Convention of Teaching Colleges of Pharmacy against conferring the degree of Doctor of Pharmacy upon the graduates of those colleges, an innovation for which I was largely responsible, and an error into which my ardor and enthusiasm at the age of twenty-seven betrayed me, and which I now so deeply regret.

I also remember well Professor Procter's solicitude for the safe progress of American Pharmacy, which he felt was seriously handicapped by the low grade of preliminary education of the apprentices taken into the drug stores.

Let us emulate his thoughtful and unselfish devotion to our chosen life occupation.

OSCAR OLDBERG.

Chicago, August, 1906.

The next paper read was one by William Saunders, of Canada:

My recollections of the late William Procter Jr., carry me back to the year 1860, when I had occasion to visit Philadelphia for the first time. I had then been in business as a pharmacist for nearly five years, and the names of Edward Parrish and William Procter had become quite familiar to me. At that time I was in poor health, and resolved that I would call on Prof. Parrish and ask his advice as to the specialist I should consult. I acted on his advice and soon received much benefit. He invited me to go out with him for a drive, which I gladly accepted. He took me to see some of the more noted places of interest, and during our drive we called on Prof. Procter. I was much impressed with him at the outset, at his kindliness of manner, his friendly attitude and the thoroughness of his knowledge of pharmaceutical matters: and withal he was so modest and retiring, almost oblivious of self. During our conversation Edward Parrish proposed to Prof. Procter that at the next meeting of the American Pharmaceutical Association it would be a good idea to make Wm. Saunders, of Canada, a member of the Association. In this proposal I heartily concurred, and at the following meeting of the Association I had the honor to be recommended for membership by these two noble men, and have ever since enjoyed the privilege of membership in this excellent institution.

From the time of my first acquaintance with Professors Parrish and Procter in the City of Brotherly Love a warm regard sprang up for both of them which was cherished to the end of their lives. For Prof. Procter I had the greatest admiration. He was so thoroughly painstaking in all his work and one of the chief attractions which brought me to the meetings of the Association from year to year was the privilege of associating with him and learning from him something of the progress made in pharmacy from year to year, to which his labors so largely contributed.

Several times I had the privilege of joining Prof. Procter in excursions planned at meetings of the Association when I greatly enjoyed the opportunity of more extended personal intercourse. One of these occasions stands out more clearly in my memory than others and that was a visit to Mammoth Cave, in Kentucky. It so happened that at the time of our arrival on a Saturday the hotel for some reason had failed to obtain its usual supply of butter, and we had no butter to our meals. I remember how kindly Prof. Procter endured this privation and how genial and pleasant he was through it all. The next day was the Sabbath and this was the only opportunity we had of seeing the wonders of the cave. At first Prof. Procter objected to going on such a journey on "first day" but his scruples were finally overcome by a proposition made that we should hold a service in one of the large chambers in the cave known as "the chapel." One of the members of the party undertook to read the church service while another was to make the responses and all joined in singing. The service was very impressive. In singing the well-known hymn "Shall we gather at the River" none joined more heartily than Prof. Procter. That was indeed a delightful occasion. Our friendship continued up to the time of Prof. Procter's lamented decease.

WM. SAUNDERS.

Agassiz, Can., August 22, 1906.

The Chairman said this paper brought to mind some pleasant recollections of his own concerning Procter. He particularly recalled the visit to Mammoth Cave referred to, and would never forget that occasion. Mrs. Procter, who was with the party, earnestly opposed going in the cave on Sunday, and Mr. Procter had great difficulty in reconciling her to the idea. He used as an argument that it was most appropriate to visit this great work of nature on the Sabbath day, and there worship God in this great temple of his own creation. But she was still reluctant to go, and it was only after they had reached the "chapel" in the cave, and Mr. Saunders had read the service of the Episcopal Church, that she was perfectly reconciled to make the trip, which proved to be a most enjoyable one. Mr. Hancock then gave some reminiscences of the meeting at Richmond, held the year before Procter died, and which was the last meeting he attended. The present Chairman was elected President at that meeting, very much to his surprise, for he was a young man then. He felt so unworthy of the high honor that, when he heard he had been nominated, he went to Prof. Procter and Dr. Squibb for advice as to what he should do. He told of how Procter laid his hand on his shoulder and reminded him that this was the act of the Association, not his act, and if any mistake had been made the Association was responsible, and not he. Acting upon this friendly advice he accepted the office, and had never regretted doing so. He also told of how the Association, at the Richmond meeting, realizing, in view of its growth and the enlargement of its work, the necessity of having a Reporter on the Progress of Pharmacy on other than a voluntary basis, as had theretofore been the case, had referred the matter to a committee composed of Procter and Squibb, who reported back recommending not only that a reporter be appointed and paid a salary for his services, but also designating the proper man for the place—Prof. C. Lewis Diehl, of Louisville, now present in the room, who has filled the office ever since, with credit to himself and honor to the Association. (Applause.) Mr. Hancock went on to speak of some letters in regard to Procter that had come into his possession, and which he would present to the Historic Section, and among others one from retiring President Lemberger, written in 1874, in which he speaks of the recent death of William Procter Jr., and laments the great loss to pharmacy occasioned thereby, the writer going on to state that only a few days before he was at the college and met Procter, who talked about the next meeting of the Association, and expressed the hope that he might be there. He then called on Mr. Lemberger, an old pupil of Procter's, for some personal recollections.

Mr. Lemberger said: Mr. Chairman, I did not know until a few moments ago that you expected me to say anything with reference to William Procter Jr. My memory of Prof. Procter goes back to 1851, when, as a student in the Philadelphia College of Pharmacy, I came to know a good deal of him. I was a country boy and he was a city man, and I well remember the kindly interest he took in me, realizing the relation we held one to the other. I remember, too, how faithfully he tried to discharge his duty to the individual student, notwithstanding all he told us in his lectures. I remember well the encouraging words received from him —and it is probably because of these memories that come upon me tonight that I am able to catch the inspiration of the evening, without any opportunity whatever for the preparation of a paper to indicate my great respect for his memory; indeed, my veneration for him, as the Father of American Pharmacy. The paper presented by Mr. Remington is not at all overdrawn, and perhaps you might say the half has not been told.

As a student at the Philadelphia College of Pharmacy, and more particularly at the period when I wound up my connection with the school, and the final examination took place, I was most profoundly impressed with the sweetness of his disposition and the strict integrity of the man. At that time we had oral examinations, they were not written; and there were no special pharmaceutical preparations required of us, and the work on our theses, the attention we paid to the lectures, and the answers we gave to the quizzes seemed to be the opportunity of the professors, and more particularly Prof. Procter, to size up the young fellow that was before him. Upon the occasion of my final examination Prof. Procter was indisposed, so much so that I had to go down to his house to go through the terrible ordeal of being examined by Procter. He saw that I was nervous, as I entered that strange home I had never been in before; and I remember well the great care he took to make me feel perfectly at home. "Now, Mr. Lemberger, it is not going to be as severe as you think," he said; "you have been careful, and have violated none of the rules of the college, and I propose to go through this examination in a sort of informal way. Take a seat; here is a glass of water." That is the way Procter received me, and I assure you there was a great deal af composure to my feelings following that sweet disposition manifested towards me. His examination was brief. He told me in about ten minutes it was entirely satisfactory, and if the rest of my examinations were as good there would be no trouble.

I learned to know Procter very much better in after years. I think he and Prof. Parrish were instrumental in my attending the meeting of the American Pharmaceutical Association. I realized from what he said to me what an opportunity as a young man I might have if I would attend the meetings and would lend any talent I might have to the advancement of the Association. But the full force of that never occurred to me until some years afterwards, when Prof. Maisch got into the field. He and Procter and others, with myself, would attend the meetings of the American Pharmaceutical Association, and it was at these gatherings that we learned to know the inner, the social, the delightful side of our friends—just as we have done here at Indianapolis during these days we have spent together: we have met new faces and made new friends, and we have learned to know them and to respect them. And so it was then; and it was through close touch with Procter that an indelible impression was made—an impression that leads me to fall in most heartily with the conviction that he indeed was the father of American Pharmacy. I cannot add anything to what has been so well said in the pen-picture by Mr. Remington and in the letters that have been read from life-long friends of his while living; but I thank you for this unexpected privilege of being permitted to offer this tribute, feeble though it be, to the memory of our worthy friend Procter. (Applause.)

The Chair then called on Mr. C. Lewis Diehl, as the Reporter on the Progress appointed at Procter's instance, to make a few remarks.

Mr. Diehl said: Mr. Chairman, Ladies and Gentlemen, Prof. Procter was to me personally very near; not because I felt intimately acquainted with him, but because he was my teacher, the man to whom I owe much of that which I know in pharmacy. I can scarcely add anything to what has been so admirably said by others. Prof. Remington has outlined to you his characteristics. He said to you among other things that, though not a botanist, he had a great love for botany. I remember on the few occasions when I had the pleasure of walking with Procter he would seem to be interested in every plant that he had not seen before, or every plant that he did not know growing in that particular locality. If he found a plant not native to America it would delight him, and he would expatiate upon the probability of its source, and how it came there; he inquired minutely into everything. Again, in the fall of the year before his death, when we went to the memorable Richmond meeting, I remember in walking through the streets of Norfolk he was very much interested in the foliage on the trees, which were so totally different from any of the trees we find in our Northern States. He was particularly anxious to see a live-oak, which he had never seen and which I don't believe grows in Virginia. But there were other oaks, the water-oak and similar oaks peculiar to the South that grew there. So his nature was always attracted to botany and everything that pertained to it.

Speaking of Procter's characteristics, during his lectures I remember that he was extremely sensitive, and that he would not brook for a moment any indignity, or any conduct on the part of the students that was unbecoming. His piercing eye would single out the culprit, and unless he was absolutely impervious to such an influence, he would mend his ways and keep quiet. I remember on one occasion where a young man had repeated the offense he singled him out and took him by the lapel of his coat and made him leave the room.

I stated that I did not feel that I was an intimate friend of Procter, but I knew him sufficiently well to recognize that he at all times was willing to assist the young students by explaining to them any problems they did not readily understand. In the quizzes he would lead up in such a way as to enable the student, if he knew anything at all, to answer the question. He was thoroughly patient with him, and treated him in such a manner as to beget his confidence in answering a question.

The Chairman added a few words in praise of Procter. He said that as a teacher, and as a worker in the American Pharmaceutical Association, he was far-reaching in his influence. He collected more statistics, and did more corresponding with pharmacists over the country, and had more influence in bringing them into this organization, than perhaps any other man in his day. He reached all sections of the country, and followed up the graduates of the colleges wherever they went, and in that way did a great good. His influence was largely felt in the organization of other societies and colleges.

The Chair then called on Mr. P. C. Candidus, of Mobile, an old pupil of Procter to say a few words.

Mr. Candidus said that everything had been told that could be said, it seemed, but that his admiration for Procter began when he was his teacher and had continued ever since. He had always thought of Procter especially in the making of pharmaceutical preparations.

The installation of officers was announced as the final order of business, and the Chair appointed Mr. Candidus and Mr. Diehl a committee to conduct the new Chairman to the platform. These gentlemen brought Mr. McIntyre forward, and Mr. Diehl introduced him. Mr. Hancock expressed his pleasure in having as his successor a gentleman so eminently worthy to fill the position of Chairman. Mr. McIntyre expressed his appreciation of the honor conferred upon him, and said he hoped to fill the office with some credit to himself and value to the Section. He then went on to say what a curious thing it seemed to him that he should be standing here in this splendid city to-day, contemplating its marvelous growth, when he could well remember as a boy standing on his father's doorstep on the road from Troy to Utica, in New York State, watching the emigrants go by on their way to found the city of Indianapolis. It seemed almost incredible to him that he should have been spared to this late day to find here a great city of two hundred thousand people.

The same committee escorted the new Secretary, Mr. Eugene C. Eberle, of Dallas, Texas, to the platform, and Mr. Diehl introduced him. Mr. Hancock greeted him cordially. Mr. Eberle thanked the members for the honor conferred, and promised to perform the duties of the office to the best of his ability.

The Chair announced that the Historian (Mr. Kremers) had run away and could not be formally installed.

There being no further business to be transacted, on motion of Mr. Remington the Section then adjourned.

ENTERTAINMENTS AT THE FIFTY-FOURTH ANNUAL MEETING.

The usual reception and ball were held Monday night at the Claypool Hotel parlors. The ladies were entertained with an automobile ride and dinner at the Country Club, a trolley ride and dinner at the White City, a musicale at the Propylaeum, a card-party at the German House with luncheon, and a theatre-party Friday evening. A general entertainment was held at Fairbank, assisted by a band-concert, with general refreshments. The gentlemen were entertained with a smoker and vaudeville at the German House on Friday night, and all visitors were furnished with coupons admitting them at all times to the Soldiers' and Sailors' Monument, White City, Wonderland, and all the different clubs of the city.

As a dessert for the entertainments a plan was conceived of taking all who could arrange it to spend Sunday at French Lick, Ind. This trip was a wonderful success, and was participated in by about 150 of the visitors from all over the United States. They were grandly entertained by Mr. Taggart, and the only expense to the participators was railroad fare at a very low figure. Generous refreshments were furnished on the train, and each lady was presented with a magnificent American Beauty rose. Many of the visitors were amazed and delighted to find on their arrival at French Lick as modern and up-to-date a hotel as could be found in New York City, and after spending Sunday there the return was made to Indianapolis Monday morning, from which point they journeyed to their several homes.

The record of attendance at the meeting showed a total of 394.

Frank H. Carter,

Local Secretary for 1906.

REPORT

ON THE

PROGRESS OF PHARMACY.

From July 1, 1905, to June 30, 1906.

By C. Lewis Diehl.

INTRODUCTORY.

The eighth decennial revision of the U. S. P. has now been exposed in the lime-light of public discussion and criticism for over a year and has elicited numerous papers from highly competent pharmaceutical and medical writers which cannot fail to have an important influence on future revisions. It is particularly gratifying to note that medical men bave been awakened to the importance of this work, and it is reasonable to entertain the hope that at the next Pharmacopœia Convention the profession of medicine will be represented by delegates who are both willing and able effectively to join in the work of revision. It is gratifying also that the book as a whole has been received with favor, and that, although unfavorable criticisms are not lacking, it is accepted as the most comprehensive and generally reliable of the pharmacopœias that have been published up to the present time.

Among the numerous papers and comments on the U. S. P. VIII. that have been published during the year, "Bulletin, No. 23" (Aug. 1, 1905), issued from the Hygienic Laboratory of the Public Health and Marine Hospital Service of the United States, and written by Reid Hunt and Murray Galt Motter, deserves particular mention on account of the lucid and masterful manner in which the changes that have been effected in the new Pharmacopœia are discussed. The newly-introduced substances, their properties, chemical relations, synonyms, and uses are interestingly described and commented on, while the changes in strength of the more important official preparations, changes in the official titles, dismissals from the Pharmacopœia, and the average doses as given in the revised edition, are here given in the form of comprehensive and convenient tables. The carefully-prepared index to this little volume is of particular value, since it permits reference to a considerable number of non-official allied compounds which are mentioned in the course of comments on the additions.

Problems for Consideration in Future Revisions of the U. S. P. furnish the text for the concluding remarks in a critical review of the U. S. P. VIII., by M. I. Wilbert (Am. Journ. Phar., Aug., 1905, 351–372). He says that a repetition of the unfortunate combination of circumstances which, after a delay of five years required for the preparation of the revised edition, forced the Board of Trustees to proclaim it as the official authority within a brief two months after its publication, should be guarded against at the next decennial meeting of the United States Pharmacopœial Convention, in 1910. This may be accomplished by outlining more clearly the general principles to be followed in revising the Pharmacopœia and by fixing on a definite date, at least four or six months after the actual publication of the book, when the same shall become authoritative and official. Moreover, the time that is usually required to prepare the revision of the Pharmacopœia for the press could, and certainly should, be materially reduced if pharmacists, and others who are interested, would liberally criticise the book before the meeting of the National Convention so as to allow the Committee on Revision and the representatives of accredited societies to present definite and acceptable outlines for revising not alone the general principles that are involved but also such of the official formulas and descriptions as may be found faulty or incorrect.

The scope of the Pharmacopœia could very well be more restricted and be made to include only such drugs and preparations as are generally used in different sections of the country; while a host of preparations not necessarily carried as an integral part of the Pharmacopœia itself, should be provided for by the introduction of general formulas, or descriptions of classes of preparations. Furthermore, for that large and constantly growing class of substances that goes to make up the universal, or common, stock of medicines, we should have proper consideration for the usages in other countries and endeavor to adjust our descriptions in such a way that they will coincide as much as possible with similar descriptions in other National Pharmacopœias—a principle which was recognized by the National Convention in 1850, and is commented on favorably in the preface to the Pharmacopœia for that year.

The progress that has been made since then in the knowledge and application of the practical sciences has had a very marked influence in eliminating local, and even national, ideas and customs, and has practically done away with the clannishness and conservatism that formerly distinguished and effectually segregated the different nations of Europe. This same spirit of progressiveness has also had its marked effect on the science of medicine; and the practice of pharmacy, particularly, has undergone change but little dreamed of half a century ago. Yet, so far, neither these changes themselves, nor the spirit of progressiveness that has brought them about, are as fully or as truthfully reflected in our National Pharmacopœia as they should be, and it remains for us to say whether or not they are to be more clearly portrayed in the next revision.

The Doses of the U. S. P. VIII. are the subject of criticism and review by M. I. Wilbert (Amer. Jour. Pharm., Febr., 1906, 87–90). Calling attention to the fact that the introduction of doses into the U. S. P. VIII. is not an innovation, since an attempt in this direction was made in connection with the first revision of the U. S. P., published in 1830, Mr. Wilbert points out that while in this early first revision, doses were appended only to the articles that were enumerated under the heading "Materia Medica;" in the present eighth decennial revision doses are appended to all medicinal substances or preparations that are intended for internal use. Following out the instructions of the National Convention, "To state the average approximate (but neither a minimum or a maximum) dose for adults, and, when deemed advisable, also for children," the Committee of Revision have appended average doses to 752 drugs and preparations. Twelve of these drugs and preparations have two widely varying quantities appended, thus making a total of 764 doses—405 by weight, 342 by liquid measure, 15 by count, and two, the doses appended to antidiphtheric serum, represent units of antitoxic power. Just what the members of the Committee on Revision considered to be metric quantities is illustrated by a summary of the figures given in the Pharmacopœia as average doses, in which an enumeration of the number of times that each quantity reoccurs is also given. A review of this table shows the smallest average dose of a solid substance—aconitine—to be 0.00015 Gm. (= 0.15 Mgm.), the bulkiest for a solid—pepo—to be 30 Gm.; the smallest official single dose of a liquid—volatile oil of mustard—0.008 Cc., and the largest—solution of magnesium citrate—360 Cc. While the figures shown in the table are open to criticism in some directions, the author on the whole concludes that the Committee of Revision have succeeded in giving a practical solution of the much-dreaded question of official doses, and have also contributed materially toward advancing the use of the metric system in medicine in this country; but they have not been altogether successful in the selection of quantities indicative of approximate, average metric doses.

Standardization in the U. S. P. VIII. is the topic of an excellent paper read by Mr. Thomas Maben before the British Pharmaceutical Conference at Brighton in 1905 (Year-book, 1905, 394–400), in which he critically reviews the standards for drugs and galenicals adopted, and expresses himself in the main very commendably on the successful solution of a problem which has engaged the attention of pharmacists in the United States, as it has in England, during several decades. He says, "it is surely a triumph for those pharmacists who have, in face of strenuous opposition and criticism, maintained that standardization was the only scientific basis in the preparation of galenicals." At this meeting the question of standardization was, in fact, illuminated by a number of notable papers, the address of the president, Mr. W. A. H. Naylor, being chiefly devoted to

Standardization as Applied to Medicines.—Mr. Naylor holds that it may be affirmed without fear of contradiction that the recognition of the principle of standardization and its embodiment in daily practice marks the most important advance which pharmacy has witnessed within recent years. Standardization as applied to a crude drug or a preparation is understood to imply that by a method of appropriate treatment ascertained by direct experiment it has been made to conform to a predetermined standard. The required standard may have a physical, chemical, or physiological basis, and may have reference either to one or more definite principles, or to a mixture of indefinite substances. The object of standardization is to secure uniformity of product, more especially in respect to medicinal activity. It is not necessary to hark back more than a generation to see the ever-lengthening strides which pharmacy has taken in the direction of plant analysis and the isolation of definite principles. Twenty-five years ago the maximum knowledge of the constituents of many of even the best known and most potent drugs was summed up in the statement that they contained a crystalline principle, generally an alkaloid, and a few remotely proximate and chemically unclassified substances. Therefore, before standardization could be brought within the range of pharmaceutical possibility, it was necessary to make a more thorough systematic and accurate investigation of crude drugs, with a view of obtaining precise information as to the nature of their constituents. To this task the younger generation of workers in the field of pharmaceutical research have mainly directed their efforts. Latterly they have occupied themselves more particularly in seeking to devise trustworthy processes for the assay of drugs and their preparations, and to the extent to which they have succeeded they have contributed in their measure to the benefits conferred on suffering humanity by the healing art. The direction in which these processes have been applied in the British Pharmacopœia is discussed by the author in a review of the processes by which the standardization of such preparations as those of opium and the liquid extracts of belladonna, cinchona, ipecacuanha and nux vomica, are effected, and suggestions are submitted for the standardization of drugs and their preparations capable of the process, such as calabar bean, conium, henbane, stramonium, jaborandi and strophanthus, which are not yet officially standardized. It should be mentioned that Mr. Naylor's criticisms and suggestions have the additional value of an extended personal experience in the study of processes of standardization. The *influence of storage* on alkaloidal preparations, the liability to loss of active principles by chemical change or precipitation when stored under proper conditions, is a pertinent question upon which the published data are scanty and barely sufficient to supply a satisfactory answer. On this question Mr. Naylor emphatically suggests that we as pharmacists cannot bestow too great thought and care on the storage of important preparations, which, even when kept under the most favorable conditions, are not free from the liability of a reduction in strength and consequent medicinal value. Regarding the *aim in standardization*, Mr. Naylor expresses the opinion that this should be to produce preparations that will represent the sum total of therapeutic activity of the drugs operated on except in cases where it is desired to obtain the medicinal effects of certain definite principles, the physiological action of which is indisputable. Without reflecting on modern methods of standardization, a besetting temptation appears to consist in a disposition to restrict the medicinal properties of a drug to a potent principle, the therapeutics of which are universally recognized by clinicians, and acting on this assumption to proceed to produce a preparation and to standardize it on the basis of the particular principle, and with little or no regard to other constituents that may directly or indirectly be of value. While it is an acknowledged fact that definite vegetable principles are in growing demand, yet, on the other hand, there is no decline in the use of preparations of drugs, those that are standardized being most favored; it is the author's belief that the extractive form of galenicals, both solid and liquid, will be used increasingly by the medical profession if pharmacists take pains to equip themselves for the successful investigation of problems connected with the chemistry of drugs. In concluding his highly interesting address, Mr. Naylor pays a graceful tribute to the memory of two distinguished fellow-workers in the field under discussion, Professor Albert B. Prescott and Professor Charles R. C. Tichborne.

The Standardization of Galenical Preparations is the subject of some pertinent observations by Mr. Charles Alexander Hill (Pharm. Journ., July 22, 1905), who says that this subject must continue to engage the attention of pharmacists until such time when galenical preparations are altogether superseded. While on all hands it is agreed that as our knowledge of drugs progresses the number of galenical preparations should be increased, it may be well to consider what is meant in pharmacy by standardization. It must be clear that the word, when applied to galenical preparations, has a different and less definite meaning than it possesses in chemistry, nor is it equivalent to the chemical term "assay." In chemistry all that it is desired to know about a standard preparation is determined by direct experiment. For example, a determination of the chlorine present as chloride in a standard solution of sodium chloride determines the constituent on which alone usefulness depends; the standardization of a galenical preparation, on the other hand, consists in the determination of a factor, or factors, which, taken in conjunction with other knowledge, are held to ensure uniformity; uniformity, that is, of medicinal value or physiological activity. Preparations of opium are standardized by determining their morphine-content. But if the medicinal value of opium preparations were truly gauged by the proportion of morphine present there would be no need to retain them in the Pharmacopœia. It is notorious, however, that opium is not replaceable by morphine, and the same is true of other drugs which are standardized on the basis of their alkaloidal content. Physicians and pharmacists, chemists and physiologists alike agree that standardization by chemical methods is the desideratum; but since those cases are comparatively few in which our present chemical knowledge is sufficient, it is only natural that attempts should have been made to attain the derived end by other means. Among these, physiological methods of assay, as applied to digitalis for instance, are of primary importance; but the number of cases in which a physiological method is indicated is limited, and the nature of the methods places them out of reach of the ordinary pharmacist.

In the larger number of cases standardization, either by chemical or physiological means, is at present impossible. Yet it is highly desirable that even in these cases there should be some sort of uniformity. To this end, the publication from several sources of analytical data, chiefly the average amounts of solid extract from tinctures, fluidextracts, etc., has in recent years met with considerable favor. The constants so ascertained, coupled with other constants, such as alcoholic strength, specific gravity, etc., are of undoubted utility *per se* in some cases, and have a certain value in all cases where other considerations are taken into account. But to take such analytical data and from them set up arbitrary standards in the belief that the interests of pharmacy are thereby advanced is delusive, and in some cases may, either in a less or greater degree, even constitute an actual danger. Generally speaking, the determination of these constants may secure uniformity as regards the physical properties of these preparations—which are by no means unimportant—but entirely misses the mark of uniformity or therapeutic activity.

In the opinion of the author the determination of the amount of extractive in fluid galenical preparations, regarded as a criterion of quality, possesses a different degree of importance in almost every case. It reaches its greatest value, perhaps, in the hands of the manufacturer, who herein finds a check on his workmen, on his method of manufacture, and in certain cases even on his crude drugs. One is driven to the conclusion, therefore, that since it is not feasible to standardize many of our important galenical preparations, the only safe course for the pharmacist to pursue is to adhere to the official formula; the more active the drug the more incumbent upon him is the necessity for this loyal adherence. While the desire to see every advance made in pharmacy is commendable, let us not try to run before we can walk, nor fall into the error of taking a step backwards under the impression that we are progressing. No amount of regulation alone will suffice to make a good galenical preparation, for the production of which there are two requisites : first, a conscience ; secondly, the ability to make it.

The Application and Limitations of Standardization affords the text for an interesting discussion on the principles of standardization by Mr. William Kirkly (Pharm. Journ., Feb. 24, 1906), who says preliminarily that his object of bringing this subject under notice is to awaken something more than a curious interest in it, because it may be that, by allowing developments to proceed without himself being in consonance with it, the pharmacist will find himself called upon to undertake responsibilities which he does not feel himself competent to discharge. Standardization is a term which to the initiated has a very clear and restricted meaning, but to the person unacquainted with the phraseology of the Pharmacopœia it has a much wider meaning. In the more general sense it has been applicable to medicinal preparations as long as official sanction of a public character has been given to drugs and preparations. This notion of standardization is the fundamental basis upon which our Pharmacopœia rests. In the more restricted sense the term standardization is the expression of an effort to secure uniformity of character and composition of the approved medicines by the aid of analysis. This is a feature which has gradually developed in our pharmacopœias for over half a century, and there is nothing novel in the principle. The term, however, has recently become narrowed down so as to embrace, practically, only the estimation of alkaloids in the preparation of drugs in which they are the active principles. As the quantities of these potent substances are so small, and the operations involved in their separation are so delicate, it is necessary for the persons undertaking this work to be more than ordinarily expert chemists. Therefore the question of the desirability of any great extension of these and similar methods to the control of galenical medicines becomes of much greater importance to the pharmacist than an increase in the other pharmacopœial standards having reference to the purity of chemicals, etc.

It may be said that the pharmacist should be prepared to supply such articles if the medical profession demands them, and that he has little or nothing to do with the medical man's views upon this question ; but a little consideration will show that any large increase in the demand for standardized galenicals will materially affect the pharmacist's relations with his assistants, his wholesale druggist, aud the public who will be called upon to pay the enhanced cost of such medicines. He cannot, however, afford to ignore the trend of medical opinion. Nevertheless, it may well be questioned whether we have not now reached a stage in the standardization of galenical preparations for alkaloids, where we may rest a little until the science of pharmacology and therapeutics has made some more progress. For, although the investigation of the action of drugs upon normal tissues and organs in animals other than man has made considerable advances during the last twenty years, no one could claim that this work forms any adequate foundation for the present practice of clinical medicine.

Standards of Purity of Chemicals are another variety of pharmacopœial standards, which, owing to the Sale of Food and Drug Acts, demand the earnest consideration of British pharmacists; and not alone on this ground should such standards be clearly defined in the Pharmacopœia, but also for the following sufficient reasons: (*a*) that the purchaser may receive just value for his money; (*b*) that the conscientious seller may be protected against the unfair competition of his unscrupulous competitor; and (*c*) that the public shall be protected against ignorant persons who may embark upon the manufacture of medicines. Moreover, it is much more satisfactory to have a precise standard stated in the Pharmacopœia, so that every pharmacist may himself apply the prescribed tests and ascertain if his articles conform to the standard. Otherwise he cannot complain if a prosecuting public analyst, setting up his own standards, succeeds in making a greater impression upon the bench than he himself does.

Standards for Galenicals, such as concentrated liquors (infusions), liquid extracts, syrups, and tinctures, come within another category. Many of them can only be described according to their taste, odor, and appearance; and the only constants that can be furnished are the specific gravity, alcoholic strength, and extractive. If such constants are prescribed in the Pharmacopœia, they should be on an accurately determined average basis—for which in some cases abundant data have been published—and on minimum limits. What we require to know, for instance, for any particular tincture, is how the extractive and alcohol vary with reference to the specific gravity. A minimum amount of extractive, providing it is not so low as to permit of poor drugs being used, is the best way of expressing the factor as a standard. Satisfactory methods of standardizing the activity of galenical preparations is most unlikely of attainment for a large number of drugs. The difficulties surrounding the application of *physiological methods* are so patent and numerous that it can hardly be conceived that much would be heard of them except for the purpose of advertisement. For all potent remedies the only plan which can claim support from medical men and pharmacists alike, is the displacement of so-called galenicals by solutions of the pure active principles; while for those remedies whose dose is moderately large and elastic, it can hardly be said that the practice of medicine calls for anything more than the warranty or personal guarantee which the qualification of a pharmacist can give for preparations made by himself from drugs of pharmacopœial quality. For this the factors mentioned, together with ordinary tests suited to particular cases, should suffice.—Pharm. Journ., Feb. 24, 1905, 197–200.

The Standardization of Drugs by Bio-chemical Methods is the subject of several papers of more than passing interest. In a paper read at the Brighton meeting of the British Pharmaceutical Conference (see Yearbook, 1905), Dr. W. E. Dixon suggests that while the B. P. has directed that certain vegetable preparations shall be subjected to chemical assay, there are certain very important drugs which at the present time it is impossible to assay satisfactorily by any chemical means. Some of these, it is true, appear to have a fairly constant action, but others vary in activity within the widest limits. He, therefore, suggests that a fixed and definite bio-chemical standardization should be adopted for these remedies as far as possible. By bio-chemical methods a drug is administered to a man or animal, and a definite reaction is obtained. The drug enters into combination with some constituent of the body, but of that nothing definite is known. The animal upon whom the experiments are made only acts as an indicator, and from certain symptoms produced one is able to judge of the activity of a preparation. The drugs which especially require standardization are the members of the digitalis series, ergot and Indian hemp. There are many others of less importance, such as filix-mass, grindelia, conium and lobelia, which can also be assayed by the physiological method, and still others, particularly those having purgative action, in which this method of testing is not suitable. The strength of a preparation of a drug cannot, however, be standardized upon patients (1) on account of the great difficulty of recognizing small effects, and (2) because it involves many experiments, so that it is necessary to apply the bio-chemical tests to lower animals. In fact almost the whole of the knowledge that is possessed of the action of drugs is derived from experiments on animals. The objection raised to the use of animals are that they are too sensitive, and any change in condition may alter the effect produced. With great care as to weight and state the effects are, however, fairly constant; nor is it true that the effects differ from those produced on man. Dr. Dixon points out the variations in therapeutic effect observed in preparations, such as digitalis, strophanthus, cannabis indica and ergot, and how these may be controlled by the bio-chemical method of testing. Ergot, in particular, has proven very unsatisfactory, six specimens of liquid extract from as many different sources, showing moderate activity in two, very feeble activity in two others, and practically no activity in the remaining two. Pharmacological standardization should not, however, be resorted to unless chemical methods are inadequate.

The Applicability of Bio-chemical Standardization is subsequently further elucidated by the same author in conjunction with G. S. Haynes

(Pharm. Journ., Dec. 2, 1905, 754). The authors observe that although with many drugs the bio-chemical method of standardization forms an extremely sensitive and accurate means of determining the degree of activity of the drugs, with others the standardization is effected only with difficulty. Thus

Cannabis Indica has an action on the brain that results in a species of intoxication, and the activity of a sample of this drug can be determined only by discovering the relative dose necessary to produce a decided effect on some animal. This is obviously not a very accurate method, because the degree of intoxication is so hard to gauge, and the personal equation is so much in evidence. The methods in vogue for standardizing

Ergot are also open to this reproach, that they are indicators of activity rather than methods by which the degree of toxicity can be determined. The method of standardization by determining the height to which a known quantity of the drug will raise the blood-pressure in some animal under fixed conditions is very much more accurate, for it affords a means by which the activity can be measured. Moreover, this is the only measurement which it is necessary to make, for the effects on the uterus and blood-vessels, which are the actions for which the ergot is employed in medicine, are proportional to the rise in blood-pressure; all three changes are brought about by a common excitation of certain nerve-centers, and the drug has no peripheral action. The activity of the members of the

Digitalis group, on the other hand, can be determined with absolute precision. These drugs attack cardiac muscle, and when they are present to a certain amount, the heart enters into rigor and dies. The reaction is one between the drug and the cardiac muscle, and the latter factor is determined from the weight of the animal which is proportional to the weight of the heart. The minimal dose which will produce this effect in an animal under fixed conditions as regards environment, species, sex, weight, etc., is the only observation which it is necessary to make; for from this observation the amount of drug necessary to kill 100 Gm. of animal is readily determined, and the latter figure is in a convenient form for making comparisons. Experiments made upon frogs, the details of which are not given, with tinctures of digitalis, strophanthus, and squill, give evidence of the precision of the bio-chemical method of standardizing these three drugs, as shown in the following table:

Drug.	Dose.	Weight of Frog.	Result.
Tinct. digitalis	2½♏	20 Gm.	Death in 66 minutes.
Tinct. digitalis	2½♏	24 Gm.	Lived.
Tinct. scillæ................	2½♏	20 Gm.	Death in 100 minutes.
Tinct. strophanthi	¼♏	17 Gm.	Death in 48 minutes.
Tinct. strophanthi	¼♏	20 Gm.	Lived.

It is evident from these experiments that the first two drugs are about equally toxic, whilst strophanthus is nearly ten times as toxic as either.

Referring to the preceding subject, Mr. William Martin (Pharm. Journ., Jan. 27, 1906, 86), remarks that the question of applying physiological tests to certain pharmaceutical preparations is admittedly one of considerable importance and may have much practical value; but judging from many statements that have recently been made in the medical and pharmaceutical press it would appear to have assumed undue proportions in the minds of certain people. Take the case of ergot, for instance, in Dr. W. E. Dixon's paper read at the Brighton Conference. It would have had more definite scientific value if he had been able to state that he had himself selected his samples of crude ergot, had had liquid extracts prepared from them to B. P. instructions under his own supervision, and had after such procedure found the variation in activity that he deplored. It has yet to be shown that there will be any variation of clinical importance if proper care is exercised by a competent pharmacist both in selecting his crude drug and in adhering to such a uniform treatment of it as the British Pharmacopœia enjoins. The principle of centralizing control is not one which will find acceptance in England until it is shown first that bio-chemical standardization is of vital importance and then that private enterprise and effort are unable to deal with the subject.

The Necessity for Bio-chemical Standardization is questioned also by Mr. E. M. Holmes (Pharm. Journ., Febr. 10, 1906, 126), who, while not questioning the desirability of the physiological standardization of galenicals and drugs which cannot be standardized by chemical tests, regards it as very doubtful that the method will secure permanent uniformity of strength. Several important questions arise in this connection which demand careful consideration by the pharmacist: (1) Is it certain, or even probable, that the physiological standard adopted by all the manufacturers will be uniform? (2) Can any guarantee be given that such preparations will retain their activity indefinitely, and that changes will not take place by exposure to light and heat or by the access of air as the contents of the bottles become lessened by use in dispensing? (3) Can the seller possibly be responsible for the activity of preparations which may have been kept for weeks or even months in a wholesale warehouse after they have been physiologically standardized and before they were purchased by the retailer? Mr. Holmes very pertinently says that fifty years ago standardization of galenicals was not thought of, and sufficient uniformity for successful medical practice was secured by reliance upon pharmacists who could be depended upon to put conscience into their preparations, and to whom physicians naturally directed their patients to take their prescriptions. All the best and largest pharmaceutical businesses in the kingdom have been founded in this way, viz., on personal reputation for good drugs and reliable preparations. Unfortunately there is a tendency at the present time for pharmacists in many cases to throw the responsibility, which should be a personal one, upon wholesale houses; many medical men naturally see no necessity for the existence of an intermediary, and prefer either to purchase drugs direct from the guarantors or to send their patients to firms of long-standing reputation.

Those pharmacists who have allowed wholesale manufacturers to take much of their galenical work out of their hands have only themselves to blame. When the guarantee again becomes a personal one, the physician and the public will be content to do without physiological standardization, and the conscientious pharmacist will not fear the Sale of Food and Drugs Acts. The pharmacist must keep pace with scientific information, and if he does not make allowance for the action of enzymes in apparently dry drugs (which really contain 10 to 12 per cent. of moisture absorbed after being dried) by thoroughly drying them and keeping them dry—or, in the case of liquid extracts or tinctures, by either boiling them to destroy the enzymes, or adding strong alcohol to throw them out of solution—he will find his drugs and preparations deteriorate. The author draws attention to the care necessary in the selection and preservation of drugs and the preparations made from them. Instead of physiological standardization, which cannot be undertaken by the retail pharmacist, more care is needed in the selection of drugs of good quality; in the careful preservation of them, and, in the case of powerful tinctures that are liable to variation, preparation from the fresh drug with strong spirit. This plan was adopted in the Portuguese Pharmacopœia in 1877, and the authorities have apparently as yet seen no reason to alter their formula, which consists of equal parts of fresh herb and 90 per cent. alcohol. The fact that preparations may vary much in strength when made strictly according to the Pharmacopœia and by a careful operator, from a number of different commercial samples of drugs—proves nothing concerning the necessity for physiological standardization, except that the drugs from which they are prepared vary according to the way in which they have been kept, and that more care, or possibly more knowledge, is needed concerning the choice of purchased drugs and the method of keeping them. It is just these points which the well-educated pharmacist can attend to better than the wholesale druggist, who cannot well go through every bale of drugs that comes into the warehouse, and see if it be uniform throughout, whilst the pharmacist can easily examine the drugs which he uses in preparations made on a small scale.

The Probable Effect of Standardization on the Manufacture of Galenicals is discussed by Mr. T. Maben in concluding a very interesting paper on "Standardization" (Pharm. Journ., January 20, 1906., 61–63). Speaking of the possible relegation of the manufacture of standardized preparations to the hands of the wholesaler, Mr. Maben says: "The great question is not whether the manufacture of galenicals is to fall into the hands of the wholesaler or whether retail pharmacists are to keep this branch of the trade in their own hands. The question is whether British medicine and British pharmacy are to be delivered from the reproach, in the one case of having to depend upon, in the other of having to supply, remedies about which damaging statements are at the present time being made." If such a state of things is allowed to continue, that drugs are supplied inert one day and toxic the next, it is a hopless case. If, on the other hand, you believe that every preparation ought to be of one uniform, invariable strength, in so far as science can determine it, then comes the time to decide the next step. "If you can do your estimation, alkaloidal or otherwise, yourself in your own laboratory, or if you can afford to pay a highly-qualified assistant to do it for you, by all means make your own galenicals; but if it will pay you better to purchase them, then do so, and never mind the stupid clap-trap that is talked about turning the chemist into a retailer of other people's manufactures. Of course he is, and always will be. Nine-tenths, probably a great deal more, of every chemist's business in busy centers consists of selling other people's manufactures, and many highly-qualified men consider that the time required to standardize a liquid extract is simply valuable time absolutely thrown away. Let us look the facts squarely in the face, and if we do we shall cease to talk as if it were a crime or a violation of professional probity for a chemist to purchase a pint of tincture from a wholesale house."

As a fitting conclusion to the subject of standardization, and particularly to the immediately preceding remarks of Mr. Maben, a brief abstract from a paper read at the Lewis and Clark Pharmaceutical Congress, Portland, Ore., July, 1905 (in Amer. Journ. Pharm., Oct. 1905, 465–473), by A. C. Zeig, may find place here. After interestingly tracing *The Development of the Manufacture of Pharmaceutical Preparations* from the earliest time to the present day, Mr. Zeig observes that up to a comparatively recent period their manufacture was confined to the individual pharmacist, and it may be said that commercial manufacture, so far as this country is concerned, received its first great stimulus during the Civil War, resulting in the establishment of laboratories on a large scale to furnish an adequate supply of medicaments for the army. It was, in fact, the beginning of an era in pharmaceutical manufacture, which for its scope, the number and character of products manufactured, the mechanical devices and machinery employed, exceeds all efforts of preceding centuries. The great activity in the field of manufacturing pharmacy no doubt to some degree justified the alarm felt by retail pharmacists, who maintained that the manufacturers were encroaching upon the field of the pharmacist and depriving him of part of his revenue; but while such a view was probably a correct one, and in harmony with the conditions prevailing thirty or forty years ago, the addition of a vast number of products of the Materia Medica, and the lack of machinery and necessary appliances, made the manufacture of pharmaceutical preparations a problem far beyond the scope or capacity of a druggist's laboratory, and greater advances have since then been made in the perfecting of labor-saving machinery in use in the large laboratories than have been made in all the centuries preceding this period. On the other hand, the author points out that, although the use of an authoritative standard for fixing the strength and quality of medicines is quite apparent, and is recognized by every civilized country, in this country conformity to the standards of the Pharmacopœia is (has heretofore been ! Rep.) a matter of choice, not compulsory; hence the Pharmacopœia does not always receive recognition as an authority, and a deplorable feature of manufactured pharmaceutical preparations to-day is their lack of uniformity. The market is flooded to-day with preparations under pharmacopœial names which differ in character so that they will not even mix with one another, although being marketed under identical names. The argument that the advance in pharmaceutical knowledge at the present time makes possible many improvements in the processes does not hold good when applied to the official preparations. Physicians have a right to demand uniformity in the official preparation, and to demand absolute proof that an identical product is obtained by an improved process. And if the pharmacopœial method or standard is not adhered to in the manufacture of a preparation, the label should specifically state how it differs from the pharmacopœial standard so that the buyer may be made aware of the fact that he is not dealing with an official product. This also brings up the question of the manufacture of unauthorized proprietary pharmaceutical preparations or specialties, which, although many of these possess undoubted therapeutic merit, has been regarded as a growing evil during the past decade. The author holds that while such preparations cannot be officially recognized until divested of all secrecy and proprietary claims, the fact of their possessing therapeutic merit entitles them to recognition, provided the proprietors or manufacturers publish full knowledge concerning them for the benefit of science and relinquish all proprietary claims to the same, relying upon the adoption of work marks or brand names to properly distinguish their product.

PROCEEDINGS OF THE STATE PHARMACEUTICAL ASSOCIATIONS.

The information concerning the meetings of the State Pharmaceutical Associations during the year 1905 has in the majority of cases been obtained from the printed proceedings of the several Associations, twenty-five of these having reached the hands of the reporter, as indicated at the conclusion of each article.

Alabama.—The Twenty-fourth Annual Meeting of the Alabama Pharmaceutical Association was held at Blount Springs, June 7 and 8, 1905, in several sessions. E. H. Cross, of Gadsden, was elected President; W. E.

Bingham, of Tuscaloosa, Secretary. Four papers were read in competition for a prize on the subject "The Most Feasible Means of Minimizing the Prescribing of Proprietary Articles by Physicians," the prize being awarded to W. E. Bingham. The Association adjourned to meet at Blount Springs, on June 13, 1906. (*From Journals.*)

Arkansas.—The Twenty-third Annual Meeting of the Arkansas Association of Pharmacists was held at Little Rock, about the middle of May, 1905, in several sessions. W. H. Skinner, of Pocahontas, was elected President; Miss Mary A. Fein, of Little Rock, Secretary. L. Mathews, of Miami, I. T., a former member of the Association, made an address, and E. T. Mitchell, of New Orleans, delivered a lecture on the "Growth of Plants." Hot Springs was chosen as the place of meeting in 1906. —(*From Journals.*)

Colorado.—The Sixteenth Annual Meeting of the Colorado Pharmaceutical Association was held at the Cliff House at Manitou, June 20, 21 and 22, 1905. Dan. Y. Wheeler, of Denver, was elected President; Chas. E. Ward, of Denver, Secretary. Several interesting papers were read—"On the Pharmacy Law," "Profitable Side Lines," "Advertising," etc. The time and place of meeting in 1906 was left to the Executive Committee. (*From Journals.*)

Connecticut.—The Twenty-ninth Annual Meeting of the Connecticut Pharmaceutical Association was held at Branford Point, a suburb of New Haven, June 13 and 14, 1905, in several sessions. J. Arthur Hodgson, of New Haven, was elected President; Charles A. Rapelye, of Hartford, Secretary. A number of interesting reports engaged the attention of the Association, and the following papers were read:

"Random Notes on Every-Day Pharmacy," by J. K. Williams.

"Golden Seal," by C. H. W. Newton.

"The Adjustment of the Relationship Between Physicians and Pharmacists," by C. S. Starr. (*From Journals.*)

Delaware.—The Nineteenth Annual Meeting of the Delaware Pharmaceutical Society was held at Wilmington, June 8, 1905. —(*From Journals.*)

Florida.—The ——— Annual Meeting of the Florida Pharmaceutical Association was held at the Tampa Bay Hotel, June 15 and 16, 1905, in several sessions. Thomas Clarke, of Jacksonville, was elected President; D. W. Ramsaur, of Palatka, Secretary. The following papers were read:

"The Relation of Twentieth-Century Women to Pharmacy," by E. Berger.

"The Benefit of Association Meetings," by L. P. Lawrence.

"Saw Palmetto," by D. W. Ramsaur.

The Association adjourned to meet at Orlando, June 13, 1906. —(*From Journals*).

Georgia.—The Thirtieth Annual Meeting of the Georgia Pharmaceutical Association was held at Columbus, May 23 and 24, 1905, in three sessions. Max Morris, of Macon, was elected President; J. B. Riley, of Macon, Secretary. The usual routine reports were read and discussed, and the following papers were read:

"A Pharmacist in an Emergency," by Dr. C. A. Francis.

"Practical Advertising," by M. D. Hodges.

"Suggestions as to the Conduct of a Successful Retail Drug Business," by J. W. Brinson, Jr.

"How to Make Solution of Magnesium Citrate that will Keep," by Jefferson D. Persse.

"Some of Our Needs," by Geo. F. Payne.

The next annual meeting will be held at Valdosta, June 12–13, 1906. —(*From Proceedings*).

Illinois.—The Twenty-sixth Annual Meeting of the Illinois Pharmaceutical Association was held at Chicago, Aug. 22 to 24, 1905, in three sessions. Chris. Garver, of Bloomington, was elected President; R. N. Dodds, of Springfield, Secretary. After the reception and disposal of the usual routine reports, a number of papers were presented and read in competition for a prize on the subject.

"Purity Rather than Price, the Prime Consideration" (six papers), by George Bollinger, H. N. Bruun, L. C. Deck, Thomas Rixleben, Harry N. Schaper and John Stuchlik.

A volunteer paper, entitled "Results of a Questionaire on Pharmaceutical Education," was read by Professor Wm. B. Day.

An interesting feature of the meeting was the responses, by invitation, of the delegates from various associations, viz.: Illinois Pharmaceutical Travelers Association, American Pharmaceutical Association, Proprietary Association of America, Missouri Pharmaceutical Association, National Association of Retail Druggists, and the Woman's Pharmaceutical Association of Chicago.

The next annual meeting will be held at Peoria, in 1906, the date to be determined by the Executive Committee. (*From Proceedings.*)

Indiana.—The Twenty-fourth Annual Meeting of the Indiana Pharmaceutical Association was held at Terre Haute, June 7 and 8, 1905, in five sessions. H. E. Glick, of Lafayette, was elected President; A. Timberlake, of Indianapolis, Secretary. A report of more than passing interest is that of the Committee on Pharmacy and Queries. In addition to the usual routine reports, the following papers were read:

"Modern Methods of Increasing Business," by Dr. H. O. Gross.

"The Drug Clerk Question," by Frank H. Carter.

"Dispensing Doctors and Prescribing Druggists," by Dr. W. Call.

"Legislation in its Relation to the Drug Clerk Problem," by Mr. Roe.

"The Camphor Tree and its Products," by A. Timberlake.

The Association adjourned to meet at Indianapolis in 1906.

(*From Proceedings.*)

Indian Territory.—The Eleventh Annual Meeting of the Indian Territory Pharmaceutical Association was held at South McAlester, May 16 and 17, 1905. Tom Shackle, of Tulsa, was elected President; H. D. Kniseley, of Checotah, Secretary-Treasurer. An invitation of the Oklahoma Pharmaceutical Association to meet with that Association at Guthrie, Okla., in 1906, was discussed, but by a close vote it was decided to retain the identity of this Association, and to hold the meeting in 1906, at Sulphur, during the month of May. (*From Journals.*)

Iowa.—The Twenty-sixth Annual Meeting of the Iowa Pharmaceutical Association was held at Des Moines, July 12, 13 and 14, 1905, in three sessions. George M. Pedersen, of Harlan, was elected President; J. M. Lindley, of Winfield, Secretary. Among the reports presented at this meeting, that of the Pharmacy Committee is particularly interesting. The following papers were read in competition for prizes offered by the Association:

"The Good of Pharmacy Schools" (five papers), by H. Hansen, P. H. Junger, W. J. Teeters, Geo. M. Pederson, and J. C. Nitzsche.

"The Relation of the Druggist and the Doctor—What it Should Be" (five papers), by Geo. M. Pedersen, Mrs. Chas. Brown, Zada M. Cooper, W. F. F. Junger and V. S. DeLay—the latter in the shape of a poem.

"The Relative Value of County, State and National Conventions" (four papers), by Geo. D. Pedersen, W. F. F. Jungers, R. Gerlach and H. Hansen.

"The Effect of the Mail Order House" (four papers), by T. H. Kenefick, V. S. DeLay (poem), Mrs. J. C. Brown and Blanche M. Carrigg.

"How Best to Improve the Prescription Counter" (three papers), by H. Hansen, V. S. DeLay (poem) and R. Gerlach.

"The Drug Business as a Profession" (three papers), by Mrs. A. B. McDaniel, Mrs. R. Gerlach and Mrs. T. H. Kenefick.

"Ladies as Druggists—Their Value to the Profession" (three papers), by Zada M. Cooper, Mrs. V. S. DeLay (poem) and Mrs. Russell.

The convention adjourned to meet at Cedar Rapids in 1906.

—(*From Proceedings.*)

Kansas.—The Twenty-sixth Annual Meeting of the Kansas Pharmaceutical Association was held at Junction City, May 23, 24 and 25, 1905, in four sessions. Carl Engel, of Manhattan, was elected President; A. E. Topping, of Overbrook, Secretary. Reports were mainly routine, that on Adulteration alone possessing more than ordinary interest. The following papers were read:

"Can Druggists Increase their Prescription Business?" by R. H. Needham.

"Experiments Relating to Evaporation," by L. R. Chatelle.

"Percentage Solutions," by Roy W. Riley.

"The Official Antitoxin," by Prof. L. E. Sayre.

"Soap Liniment and Castile Soap," by L. D. Havenhill.

The Association adjourned to meet at Emporia, May 22, 23 and 24, 1906. (*From Proceedings.*)

Kentucky. — The Twenty-eighth Annual Meeting of the Kentucky Pharmaceutical Association was held at Glen Springs, June 20, 22 and 23, 1905, in three sessions. C. A. Leathers, of Lawrenceburg, was elected President; J. W. Gayle, of Frankfort, Secretary. The usual routine business was transacted and the following papers were read:

"Should Purity Be the Prime Consideration?" by Henry A. Fabra.

"How to Permit the Sale of Wines and Liquors Legitimately by Legislation Without Casting Odium on the Druggists' Profession," by Vernon Driskell.

"Seasonable Goods, their Classification, and the Best Manner of Advertising Them," by W. H. Watson.

"Tincture of Opium, U. S. P.," by Burr M. Overton.

"How to Quiet the Baby," by Mrs. C. A. Leathers (poem).

"To What Extent Can the Druggist in a Community, by Organization, Control the Price on Patent and Proprietary Medicines Within the Law?" by Simon N. Jones.

"Why Should the Druggists of Kentucky become Members of the Pharmaceutical Association?" by Simon N. Jones.

"The Mann Bill—Its Advantages and Disadvantages, Applicable to the Retail Druggist" (two papers), by Addison Dimmitt and Simon N. Jones.

"Soda Water—How to Make it Profitable" (three papers), by Vernon Driskell, Herman H. Koegel, and W. H. Tibbals.

"Should Opium and Its Preparations, and Carbolic Acid, be Restricted in Their Sale by Law, as Cocaine Now Is?" (two papers), by Vernon Driskell and Addison Dimmitt.

The Association adjourned to meet in 1906, time and place to be determined by the Executive Committee (Cerulean Springs, June 19 to 22). (*From Proceedings.*)

Louisiana—The Twenty-third Annual Meeting of the Louisiana State Pharmaceutical Association was held at New Orleans, May 2 to 4, 1905, in three sessions. T. J. Maguire, of Baton Rouge, was elected President; Geo. W. McDuff, of New Orleans, Secretary. Among other reports, an interesting report was presented by the Committee on Adulteration and Deterioration of Drugs, in which the important recommendation is made that the Committee on Legislation take steps to secure the recognition of the U. S. Pharmacopœia by the State of Louisiana. For this purpose the

Committee has formulated an act which is deemed appropriate for consideration by the Legislature.

The Association adjourned to meet at New Orleans, April 17, 18 and 19, 1906. (*From Proceedings.*)

Maine.—The Twenty-eighth Annual Meeting of the Maine Pharmaceutical Association was held at Bangor, July 6, 1905. A. W. Meserve, of Kennebunk, was elected President; M. L. Porter, of Danforth, Secretary. (*From Journals.*)

Maryland.—The Twenty-third Annual Meeting of the Maryland Pharmaceutical Association was was held at Betterton, June 20 and 23, in five sessions. M. A. Toulson, of Charlestown, was elected President; Louis Schulze, of Baltimore, Secretary. Among the reports received and discussed at this meeting, those from the Committees on Adulteration, on Pharmacy, on Ethics, and on Procter Memorial, may be mentioned as of particular interest. The following papers were read:

"On Disintegration," by Wm. J. Lowry, Jr.

"On Ammonium Phosphate," by H. F. Baker.

"On Some Assay Work on Dover's Powder," by E. F. Kelly.

"A Prescription Symposium," by Louis Schulze.

"The Antitoxin Unit," by H. P. Hynson.

The Association adjourned without date, the time and place for the next annual meeting to be announced by the Executive Committee. (*From Proceedings.*)

Massachusetts.—The Twenty-fourth Annual Meeting of the Massachusetts State Pharmaceutical Association was held at Gloucester, June 20, 21 and 22, 1905, in four sessions. P. J. McCormick, of Charlestown, was elected President; James F. Guerin, of Worcester, Permanent Secretary. Among the numerous reports received and discussed, that from the Committee on Adulteration and Sophistication, giving the results of the examination of a large number of drugs, deserve special mention. The following papers were presented at this meeting:

"Lack of Good Clerks, Being Suggestions from a Drug Clerk's Point of View," by H. F. Gould.

"A Study of Liquors and Cordials," by T. Arthur McCoy.

"Objectionable Advertizing," by Henry D. Smith.

"A Few Practical Suggestions on Percolation," by Henry D. Smith.

The Association adjourned to meet at —— in 1906. —(*From Proceedings*).

Michigan.—The Twenty-third Annual Meeting of the Michigan State Pharmaceutical Association was held at Kalamazoo, August 8 and 9, 1905, in three sessions. J. O. Schlotterbeck, of Ann Arbor, was elected President; C. E. Calkins, Ann Arbor, Secretary. An interesting report was presented by the Adulteration Committee. The following papers were read:

"Credits and Collections," by A. L. Walker.

"What Class of Prescriptions are Physicians Writing?" by W. A. Hall.

"Dispensing Notes," by Leonard A. Seltzer.

"Some Essentials to Business Success," by A. S. Parker.

"Some Drug-Store Arithmetic," by A. H. Webster.

The Association adjourned without date, the time and place for the next annual meeting to be determined by the Executive Committee and the President and Secretary. (*From Proceedings.*)

Minnesota.—The Twenty-first Annual Meeting of the Minnesota State Pharmaceutical Association was held at Duluth, July 18, 19 and 20, 1905, in six sessions. Chas. H. Huhn, of Minneapolis, was elected President; Theo. F. Leeb, of Winona, Secretary. An interesting report on the 1900 Pharmacopœia was made by Professor Wulling, Dean of the School of Pharmacy of the University of Minnesota. The following papers were read:

"The Ideal of Pharmacy," by Professor Wulling.

"The College of Pharmacy of the University of Minnesota—Historical," (a continuation) by Professor Wulling.

"Moral Reasons for Association," by Andrew J. Eckstein.

The Association adjourned without date, the time and place to be determined by the Executive Committee. (*From Proceedings.*)

Mississippi.—The Third Annual Meeting of the Mississippi State Pharmaceutical Association was held at Crystal Springs, July 7, 1905. A. Fly, of McComb City, was elected President; O. W. Bethea, of Meridian, Secretary. Routine business only was transacted at this meeting, which completed its work in one session. The Association adjourned to meet at Crystal Springs in 1906, the date to be determined by the Entertainment Committee. (*From Proceedings.*)

Missouri.—The Twenty-seventh Annual Meeting of the Missouri Pharmaceutical Association was held at Pertle Springs, Warrensburg, June 13, 14, 15 and 16, 1905, in six sessions. J. F. Llewellyn, of Mexico, was elected President; Dr. H. M. Whelpley, of St. Louis, Permanent Secretary. The business transacted by the Association was of the usual routine character, but a large number of papers served well to fill the time of the six sessions held. The titles are as follows:

"Second Missouri Pharmaceutical Association Meeting," by Dr. H. M. Whelpley.

"Addenda to Second Missouri Pharmaceutical Association Meeting," by Dr. H. M. Pettit.

"Aniline Colors," by L. N. Sahm and Wm. Mittelbach.

"A Druggist," by F. R. Dimmitt.

"First Drug Periodical in Missouri," by Dr. H. M. Whelpley.

"First Weekly Drug Journal in Missouri," by Dr. H. M. Whelpley.

"Leisure Moments Turned into Days of Profit," by Chas. P. Wright.

"Malay Medicine Man," by J. F. Llewellyn.

"Microscopy and the New Pharmacopœia," by Dr. H. M. Whelpley.

"A Digest of Examination of Official Chemicals," by Dr. Chas. E. Caspari.

"Pharmacy in 1880 and Now," by Dr. Paul Schweitzer.

"Prescription and Dispensary Chips," by Prof. Francis Hemm.

"Some Laws of Direct Interest to Us," by Prof. Francis Hemm.

"Timely Topics," by Dr. H. M. Whelpley.

The Association adjourned to meet at Pertle Springs, June 12 to 15, 1906. (*From Proceedings.*)

Nebraska.—The Twenty-fourth Annual Meeting of the Nebraska State Pharmaceutical Association was held at York, June 6, 7 and 8, 1905, in four sessions. N. P. Hansen, of Kearney, was elected President; Oscar Bauman, of Grand Island, Secretary. The usual routine business was transacted, and the following papers were read:

"Graduation as a Prerequisite to Board Examinations," by John Motl.

"Dispensing," by M. E. Shultz.

"How to Get Next to the Doctor, and Keep the Doctor Next to You," (three papers) by C. E. Hopping, F. Simon and Frank B. Hardesty.

"Women in Pharmacy," by Theresa St. Martin.

"The Standard of Pharmacy," by J. E. Harper.

"Quality and Price," by W. E. Walters.

The Association adjourned to meet at Hastings, June 5–7, 1906.
—(*From Proceedings.*)

New Hampshire.—The Thirty-second Annual Meeting of the New Hampshire Pharmaceutical Association was held at Plymouth, June 27 and 28, 1905, in two sessions. Albert J. Weeks, of Exeter, was elected President; John H. Marshall, of Manchester, Secretary. Routine business only was transacted. The Association adjourned to meet at Manchester, June 26 and 27, 1906. (*From Proceedings.*)

New Jersey.—The Thirty-fifth Annual Meeting of the New Jersey Pharmaceutical Association was held at Atlantic City, June 14 and 15, 1905, in four sessions. William M. Davis, of East Orange, was elected President; Frank C. Stutzlen, of Elizabeth, Secretary. Besides business of the usual routine character, the following papers were read during the sessions:

"Glyceritum Ulmi," by P. E. Hommell.

"The Drugs Containing Tannic Acid," by P. E. Hommell.

"A Comparative Study of the Tests for Formaldehyde," by Charles H. La Wall.

"Tinctura Persionis," by Geo. W. Parisen.

"Formulas for Fluidextracts of Glycyrrhiza and Gentian," by George M. Beringer.

"An Assay for Camphor Liniment," by E. Fullerton Cook.

"Syrup Hypophosphites and Syrup Hypophosphites Comp.," by Adolph T. Marquier.

"The Year of the Serial Numbering Plan in Essex," by Edward A. Sayre.

The Association adjourned to meet at Atlantic City, June, 1906.

—(*From Proceedings*).

New York.—The Twenty-seventh Annual Meeting of the New York State Pharmaceutical Association was held at Saratoga Springs, June 27, 28, 29 and 30, 1905, in five sessions. James A. Lockie, of Buffalo, was elected President; S. V. B. Swann, of New York City, Secretary. Among the reports presented at the meeting, that of Thomas J. Keenan, "On New Remedies" introduced since June, 1904, must take precedence in importance. The following papers were read:

"Iodoform at Home," by Luther F. Stevens.

"Method of Detecting Methyl Alcohol," by Dr. Joseph Kahn.

The Association adjourned to meet at Niagara Falls in 1906.

—(*From Proceedings*).

North Carolina.—The Twenty-sixth Annual Meeting of the North Carolina Pharmaceutical Association was held at Morehead City, June 22 and 23, 1905, in four sessions. T. R. Hood, of Smithfield, was elected President; P. W. Vaughan, of Durham, Secretary. The following papers were read:

"Pepsin as an Excipient for Pills Containing Volatile Liquid," by Wm. H. Blauvelt.

"Are Not the Average Drug Clerk's Hours, in North Carolina, Too Long?" by Wm. Niestlie.

"How to Get Physicians to Prescribe Preparations of the National Formulary," by Henry T. Hicks.

"Counter Prescribing," by Henry T. Hicks.

The Association adjourned to meet at Wrightsville, June 14 and 15, 1906. (*From Proceedings.*)

North Dakota.—The Twentieth Annual Meeting of the North Dakota Pharmaceutical Association was held at Fargo, August 8 and 9, 1905. H. H. Bakeman, of Cooperstown, was elected President; W. S. Parker, of Lisbon, Secretary and Treasurer. The subjects of "Liquozone" and "Herpicide" furnished interesting topics for discussion.

—(*From Journals.*)

Ohio.—The Twenty-seventh Annual Meeting of the Ohio State Pharmaceutical Association was held at Cedar Point, June 20, 21, 22 and 23, 1905, in four sessions. Z. T. Baltzly, of Massillon, was elected President; Theo. D. Wetterstroem, of Cincinnati, Permanent Secretary. The interest in the meeting was well maintained during the sessions by the discussion arising from reports of committees, among which those on adulterations, and on the History of Pharmacy in Ohio, and the proposed Procter Memorial may be mentioned. The following papers were read:

"Make Your Jobber Do His Duty," by Joseph Feil.

"The Scarcity of Drug Clerks (A Possible Solution)," by Wm. F. Kaemmerer.

The Association adjourned to meet at Cedar Point, June 26–28, 1906.

—(*From Proceedings.*)

Oklahoma.—The Fifteenth Annual Meeting of the Oklahoma Pharmaceutical Association was held at Shawnee, May 10 and 11, 1905. A. B. Clark, of Watonga, was elected President; Frank Weaver, of Oklahoma City, Secretary. The following papers were read:

"The Retail Druggist as a Manufacturer," by C. A. Dow.

"The Wholesalers' View on the Direct Contract or Serial Number Plan," by E. S. Malone.

"The Secret of Securing a Large Prescription Business," by J. C. Burton.

"Druggists' Advertising," by Frank Dinkler.

"My Association with Oklahoma Druggists," by Miss Zoe Thompson.

"My Views," by Miss Effie Stone.

"Why I Quit the Drug Business," by John Wand.

"Purity Rather than Price Should be the Prime Consideration," by Winfield S. Samuel.

The Association adjourned to meet at Guthrie in May, 1906.

—(*From Proceedings.*)

Oregon.—The —— Annual Meeting of the Oregon Pharmaceutical Association was held in joint session with the Washington State Pharmaceutical Association en route and at Long Beach, Portland, July —, 1905. Frank P. Pozzi, of Portland, was elected President; A. W. Allen, of Portland, Secretary. The following papers were read:

"Ethics in Pharmacy," by J. M. Ricen.

"The Evil of Substitution," by P. Jenson, Tacoma.

"The Evils of Narcotics," by Frank Pozzi.

"The Emulsion of Quinine," by Frank Pozzi. (*From Journals.*)

Pennsylvania.—The Twenty-eighth Annual Meeting of the Pennsylvania Pharmaceutical Association was held in Bedford Springs Hotel, Bedford, June 20, 21 and 22, 1905, in – sessions. Daniel J. Thomas, of Scranton, was elected President; Jacob A. Miller, Harrisburg, Secretary. Among the many reports received and discussed, those on adulteration and on trade interests may be mentioned as being particularly interesting. In conection with the latter it is noteworthy that the committee submitted an article entitled:

"The Declining Art of Prescribing," which was heartily endorsed by the Association, and recommended to the careful consideration of the medical profession by the pharmacists of Pennsylvania.

Other papers read at this meeting were the following:

"The American Pharmaceutical Association," by L. Emanuel.

"Advertising Idea," by H. F. Ruhl.

"Apparatus for Suspending Graduates, etc." by I. M. Weills.

"Awakening of the Pharmacist," by B. E. Pritchard.

"Defection of Benzoic and Salicylic Acids," by F. X. Moerk.

"Better Preliminary Education Desirable," by J. S. Gleghorn.

"Caring for and Dispensing Lime Water," by B. E. Pritchard.

"Cheap Furniture Polish," by Frank T. May.

"Check on Receipted Bills," by Theo. Campbell.

"Commercial Volatile Oils of the Coniferae," by George R. Pancoast, M. D., and Willard Graham.

"Drug-Store Experience," by C. B. Lowe.

"Indexing the Store," by W. O. Frailey.

"Is the N. A. R. D. a Scheme to Get Something for Nothing?" (three papers), by J. L. White, W. O. Frailey, and T. H. Potts.

"Keeping Blue Mass," by H. F. Ruhl.

"Laboratory Notes," by C. E. Vanderkleed.

"Method of Advertising," by Theo. Campbell.

"Use of Mimeograph," by E. F. Cook.

"Nostrum Evil," by. P. H. Utech.

"Paper and Twine" (two papers), by H. F. Ruhl, and C. L. Bouta.

"Prerequisite Law," by J. P. Remington.

"Prescription Incompatibility," by R. H. Lackey.

"Rules for Prescription Filling, by E. F. Cook.

"Soda Water Dispensing," by Fred. S. Nagle.

"Two Windows that Sold Goods," by M. W. Bamford.

"The Use of the Typewriter for Prescription Labels" (two papers), by H. F. Ruhl, and W. O. Frailey.

"Vanillin," by C. H. La Wall.

The Association adjourned to meet in Glen Summit Springs Hotel (near Wilkes-Barre), June 26–28, 1906. (*From Proceedings.*)

Rhode Island.—The Twenty-ninth Annual Meeting of the Rhode Island Pharmaceutical Association was held at Providence, January 10, 1906. John E. Groff, of Providence, was elected President; Charles H. Daggett, of Providence, Secretary.

South Carolina.—The Twenty-ninth Annual Meeting of the South Carolina Pharmaceutical Association was held at White Stone Springs, July 26 and 27, 1905, in two sessions. C. A. Milford, of Abbeville, was elected President; Frank M. Smith, of Charleston, Secretary and Treasurer. (*From Journals.*)

South Dakota.—The Twentieth Annual Meeting of the South Dakota State Pharmaceutical Association was held at Aberdeen, August 9–12, 1905, in four sessions. W. F. Mitchell, of Willow Lake, was elected President; E. C. Bent, of Dell Rapids, Secretary. An interesting report was presented by the Committee on Pharmacy and Queries, and the following papers were read:

"The Pharmacist and the Physician: How Can the Interest of Each be Best Promoted and Aided?" by Dr. E. Jay Clemons.

"The Apprentice, The Assistant, The Clerk, and The Pharmacist," by E. C. Bent.

The Association adjourned to meet at Sioux Falls, August 15 to 17, 1906. —(*From Proceedings.*)

Tennessee.—The Twentieth Annual Meeting of the Tennessee Pharmaceutical Association was held at Bon Aqua Springs, July 19–21, 1905, in six sessions. T. J. Shannon, of Sharon, was elected President; E. F. Trolinger, of Nashville, Secretary. Besides the annual routine reports, a number of interesting papers were presented under the following titles:

"What are the Best Methods of Advertising that Can Be Adopted by the Retail Druggist?" by T. J. Shannon.

"Arrangement of Stock for Convenience and Display," by M. E. Hutton.

"The Professional Services Rendered by the Pharmacist," by D. H. Neil.

"What Pharmaceuticals Can Be Profitably Manufactured by the Small Druggist?" by Samuel C. Davis.

"The Best Side Line to Handle, both for Professional Reputation and Financial Returns," by T. J. Derryberry.

"How can Druggists' Associations be Made of More Practical Service?" by David J. Kuhn.

"How can Business Dealings with the Dispensing Physician be Most Profitably Cultivated?" by Samuel C. Davis.

"The Benefits of a Pharmacy Law," by A. B. Rains.

The Association adjourned to meet at Lookout Mountain, the third Tuesday in July, 1906. (*From Proceedings.*)

Texas.—The Twenty-sixth Annual Meeting of the Texas Pharmaceutical Association was held at Fort Worth, June 13 and 14, 1905, in several sessions. J. P. Hayter, of Decatur, was elected President; R. H. Walker, of Gonzales, Secretary and Treasurer. Among the interesting reports presented that on "Practical Pharmacy," by E. G. Eberle, engaged the attention of the Association during the greater part of a morning session. The following papers were read:

"Aqueous Solutions of Ergot," by W. A. Zahner.

"The Relationship Between the Doctor and the Druggist," by L. D. Heaton.

The Association adjourned to meet at Mineral Wells in 1906.
—(*From Journals.*)

Utah.—The —— Annual Meeting of the Utah Pharmaceutical Association was held at Salt Lake City, August —— 1905, in two days' sittings. Clem Shramm, of ——, was elected President; Geo. W. Luft, Secretary. The question of the formation of an interstate Pharmaceutical Association was discussed and referred to a committee for future report. Ogden was chosen as the place to hold the Annual Meeting in 1906.
—(*From Journals.*)

Vermont.—The Twelfth Annual Meeting of the Vermont State Pharmaceutical Association was held at Burlington, July 12–13, 1905, in five sessions. F. W. Mitchell, of Richford, was elected President; W. F. Terrill, of Montpelier, Secretary. Besides the usual routine work several interesting reports, and an address on "Botany and its Relation to the Pharmacist," delivered by Mr. S. C. Hood, of the Vermont State Agricultural College and of the Department of Agriculture at Washington, engaged the attention of the members at this meeting.

The Association adjourned to meet at a time and place to be announced by the Executive Committee. (*From Proceedings.*)

Virginia.—The Twenty-fourth Annual Meeting of the Virginia Pharmaceutical Association was held on board the Merchants' and Miners' steamship Dorchester, July 10 to 12, 1905, while en-route to Providence, R. I., as the guests of the Rhode Island Pharmaceutical Association, several sessions were held. T. A. Miller, of Richmond, was elected President; C. R. Fleet, of Lynchburg, Secretary. The most important business transacted was the agreement upon certain changes in the State pharmaceutical laws to be recommended to the Legislature. (*From Journals.*)

Washington.—The Sixteenth Annual Meeting of the Washington State Pharmaceutical Association was held in joint session with the Oregon Pharmaceutical Association, en route to Long Beach (Portland) Oregon, July —, 1905. (*From Journals.*)

Wisconsin.—The Twenty-fifth Annual Meeting of the Wisconsin Pharmaceutical Association was held at Madison, July 11, 12, 13 and 14, 1905, in four sessions. H. L. Schulz, of Milwaukee, was elected President; Henry Rollmann, of Chilton, Secretary.

Among other interesting reports received and discussed, that of the Historical Committee is of particular interest in connection with the twenty-five years of Association activity, which is described in a separate paper, presumably prepared by the chairman of that Committee. Other papers read at this meeting are the following:

"The Retail Store and Practical Points on Advertising," by Edward G. Raeuber.

"How to Keep Good Clerks," by Otto J. S. Boberg.

The Association adjourned to meet at Appleton in 1906.

—(*From Proceedings.*)

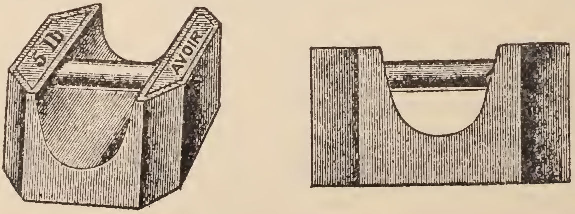
PHARMACY.

A. Apparatus and Manipulations.

The Balance—History and Description of the Different Forms.—I. W. Brandel and Edward Kremers publish a historical review of the gradual development of the balance from the earliest times of which we have record to the present, from the primitive form in use by the ancient Egyptians, as illustrated on an Egyptian papyrus, to the wonderfully perfect instruments of precision modernly constructed for the most delicate analytical weighings. After a lucid description of the principles involved in the use and construction of the balance, the authors give a comprehensive and detailed description of the different forms of balances that have been designed and are in use, the text being illustrated by numerous cuts, which serve to elucidate the complicated details of construction, while the voluminous compilation itself must prove useful, not alone to students interested in the subject, but to instructors and to professional men in general. Supplementary to this very exhaustive compilation, the authors give a list of illustrations compiled from such historical treatises as ought to be found in every college library, and conclude their paper (which covers from four to ten or more pages in each number of the periodical below mentioned) with a comprehensive bibliography on the subject.—Phar. Review, Nov. and Dec., 1905, Feb., Mar.. April, May and June, 1906.

Avoirdupois Weights.—English Standards in the Decimal System.—The British Board of Trade has sanctioned the use of weights of 20 pounds, 10 pounds and 5 pounds in trade, and the necessary standards are being pre-

Fig. 1.



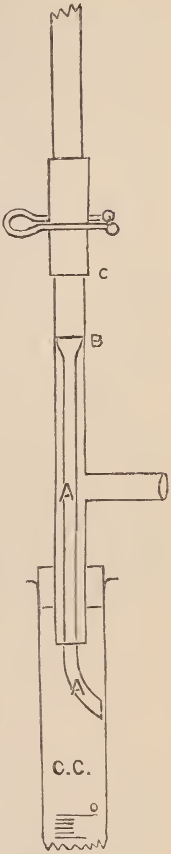
Avoirdupois Weights.

pared. This is counted a score for the decimal system.—Chem. & Drug., July 22, 1905, 114.

The order in Council authorizing the three new standard weights which incorporate the decimal system with avoirdupois weight is published in the "London Gazette" of May 19, 1905. The standard weights to be used by the Board of Trade and its officers for the purpose of verification are in the octagonal form, illustrated by Fig. 1, which represents the 5-pound weight on ⅓-scale.—Ibid., May 26, 1906, 816.

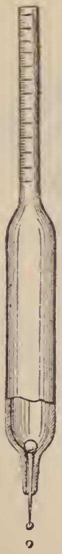
Burette.—A Filling Device.—Edward French has devised the little apparatus shown by Fig. 2, with which ordinary burettes may be rendered self-filling, and thus, after having been calibrated, do not require to be discarded. The device consists of a T-tube of such a diameter as will enable it to be attached to a burrette through a cork or rubber stopper. Passing down the T-tube is a narrow tube (A), made by drawing out a piece of wider tube, the wider part being fused to the T-tube as shown at (B), or it may be fixed by means of rubber. The narrow tube is then bent and cut off so that the end just touches the wall of the burrette. The T-tube being then connected with the syphon-tube of the stock-bottle by a short section of rubber tube (C), bearing a pinch-cock, the standard solution may be allowed to flow down the walls of the burette, air bubbles being thus avoided. The displaced air escapes by the side branch of the T-tube, and when the burette is in use air enters at the same place, which, when the apparatus is not in use is closed by short sections of rubber, plugged at one end, or an ordinary rubber nipple.—Chem. News, Febr. 16, 1906, 71.

Fig. 2.



Burette.

Fig. 3.

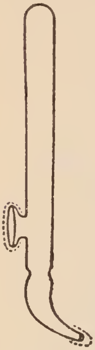


Dropping Pipette.

Dropping Pipette—A Simple Device.—A. Koren has applied for a patent in Norway for a very simple device by means of which the drops from a pipette may be regulated so as to reduce them to a very minute size. The device, shown by Fig. 3, consists simply of the introduction of a more or less pointed nail into and through the outlet of the pipette. In use the size of the drops depends on the shape and size of the nail-point. In this way it has been possible to form 414 drops with 1 Gm. of chloroform, for instance, whereas with a normal dropper only 55 drops were obtainable with the same quantity.—Pharm. Ztg., li, No. 31 (1906), 353.

Dropping Tube—A Simple Form.—Wilh. Brauns supplies a simple dropping arrangement which serves at the same time as a secure container of medicaments to be used by drops, and is particularly useful in eye and ear practice. The container, as shown by Fig. 4, consists of a tube with two openings, the constricted outflow, closed by a rubber cap when not in use, and a large opening on the main stem of the tube, closed by a thin membrane of soft rubber, as indicated by the dotted outline over the flanged neck of this opening. In use, the small cap having been removed from the nozzle, the contents may be delivered drop by drop, regulated by slight pressure with the finger on the membrane covering the large opening. —Pharm. Ztg., l, No. 98 (1905), 1034.

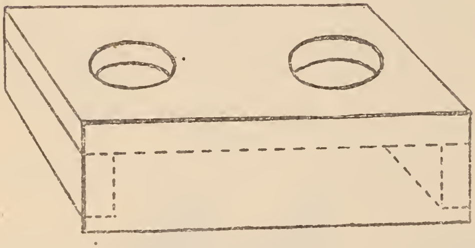
Fig. 4.



Dropping Tube.

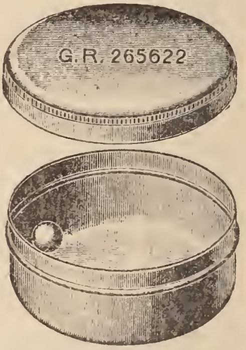
Mortar Holder—A Simple Device.—Jos. F. Hostelly suggests the device shown by Fig. 5, for holding mortars in firm position, while working pill-masses, etc. A round hole (or more, to accommodate different sizes), diminishing somewhat as it enters, is cut with a keyhole saw in a one-inch board, of a size into which a small pill-mortar will fit, the board encircling the mortar around the middle of the bowl. Strips cut from a one-inch board are nailed to the ends of this perforated piece of board across the the grain, to elevate it about 1½ inches above the counter; then another thinner strip is to be nailed across the front, extending a half-inch below the heavy strips on the ends of the board, the extension to rest against the edge of the counter, and so hold the device from slipping when in use, like the cleat on the bottom of a pill machine.—Merck's Rep., July, 1905, 205.

Fig. 5.



Mortar Holder.

Fig. 6.



Powder Mixer.

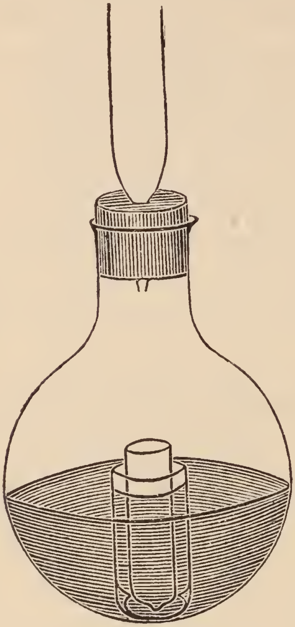
Powder Mixer—A Simple Device on a Well-known Principle.—J. Wolsiffer describes and supplies a powder-mixer which is simply the application of an old and well-known device to practical use at the prescription counter. It consists of a metal box (Fig. 6), into which the powders to be mixed are weighed directly; a small metal ball is then added to the contents, and the cover being put on securely, the box is rotated so as to give rapid motion to the enclosed ball, which effects the perfect admixture of the powders in a very short time.—Pharm. Ztg. li, No. 20 (1906), 226.

Prescription Sieve—A Cheap Contrivance.—Hugh Craig finds convenient use at the prescription counter of a sieve constructed as follows: Take two of the tin boxes used by wholesale druggists (the round ones are the best), of about one pound capacity. Have a tinsmith cut down one of these a little below the ring and stretch it to fit on the other like a lid, but not too tightly. Put the powder to be sifted into the deeper tin, stretch a piece of gauze or bolting-cloth over the top and press down over it the box that has been stretched; invert the sieve, and a few circular shakings will accomplish the sifting with no loss of time or ingredients.—Drugg. Circ., June, 1906, 199.

Extraction Apparatus—New Form of Cup.—E. Bruce Warren has designed a cup for general extraction purposes which presents the advantage that the substance under treatment whilst being acted on by the pure solvent is kept at the temperature of the boiling-point of the solvent employed, thus greatly facilitating the extraction of difficultly soluble substances. The device is shown by Fig. 7, in which the cup containing the substance to be extracted is supported in a tube, and the solvent is kept in a cup at a height corresponding to the height of the outer tube. In use, the bottom of the cup is covered by a plug of cotton or other suitable substance, and the material weighed into it. The cup is placed in a flask, sufficient solvent is poured in, and the flask fitted with a reflux condenser arranged to let the condensed solvent fall back into the cup. This percolates through the material and passes away with the soluble matter through the outlet back into the flask. After the extraction is completed, the residue can be dried in a current of gas, if the substance is likely to undergo any change during drying in the ordinary way, by connecting up with the outlet of the cup.—Chem. News, May 18, 1906, 228.

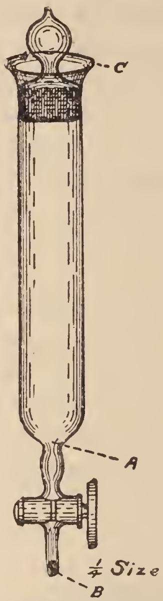
Assay Percolator—Description and Advantages.—Frank R. Eldred describes the little percolator shown by Fig. 8, which has proven very useful in assaying drugs. In using this percolator, a plug of cotton is packed tightly below the constriction *A*, by means of a wire, which may be sharpened on one end and provided with several barbs for removing the cotton. The dry drug is placed in the percolator, the solvent is then added, the stopper inserted, and the whole thoroughly shaken. During the maceration the stopper is held in place by a spring clip. If the stopper is removed carefully when the maceration is finished, the small amount of solvent which may be forced up around the stopper can be retained in the funnel-shaped top *C*, and washed down by a jet of the solvent, most conveniently produced by a Schuster's dropping-bottle, the heat of the hand being sufficient to expel a volatile solvent, such as ether or chloroform. A plug of cotton is then inserted and pressed down with a glass rod, thus removing the particles of drug from the sides of the percolator, and packing the drug for percolation. The rate of flow of the percolate can be regulated by the stop-cock.—Merck's Rep., May, 1906, 139; from Journ. Amer. Chem. Soc.

FIG. 7.



Extraction Apparatus.

FIG. 8.

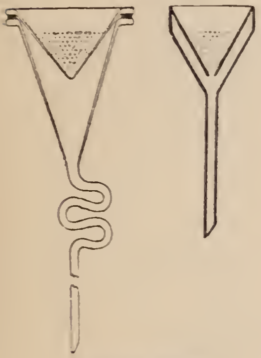


Assay Percolator.

Filters—Prevention of Rupture.—The liability of the folded filters to expand their folds in the conical apex and to tear is prevented by Eschenburg by a simple expedient. Before fully expanding the filter a piece of string is loosely tied around the folds a short distance above the point, which is then well inserted into the neck of the funnel and the filter spread out, moistened, and filled as usual. In this way the point of the filter is perfectly supported, and the channels formed by the folds remain intact, so that the filtrate will pass into the funnel tube uninterrupted.—Apoth. Ztg., xx, No. 63 (1905) 620.

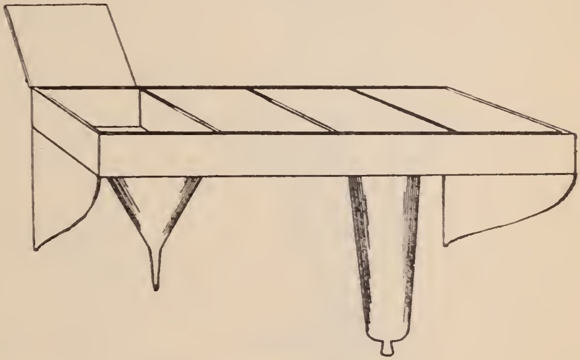
Quick Filter—Improved Construction.—R. Gædicke has designed the quick-filter funnel shown by Fig. 9, which is intended particularly for accurate and expeditious filtrations in qualitative processes. The funnel is provided with a perforated conical filter support, which is constructed of porcelain and accurately ground so as to form a hermetically-closed joint, with the edges of the funnel body, while the outflow tube of the funnel is bent so as to form a series of traps which secure the production and maintenance of a partial vacuum in the body of the funnel, and thus the rapid and regular flow of filtrate. The essential novelty in this device is the conical filter support into which the filter must be fitted closely, so that the partial vaccum may be maintained by the outflowing filtrate.—Apoth. Ztg., xx, No. 54 (1905), 538.

FIG. 9.



Quick Filter.

FIG. 10.



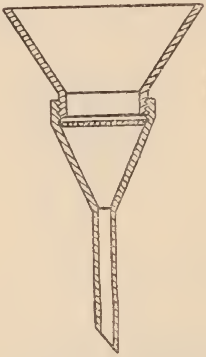
Filter and Percolator Rack.

Filter and Percolator Rack—Protecting Covers.—J. F. Hostelley has designed the filter and percolator rack provided with hinged lids covering each filter or percolator, as shown by FIG. 10. No dust or insects can get into the filter, and loss by evaporation is minimized. A hole in the centre of each lid would receive the neck of the feeding-bottle for the automatic supply of the liquid to be filtered or of menstruum for percolation.—West. Drug., Aug., 1905, 483.

Suction-Funnel—A Useful Contrivance.—W. Lenz has devised the suction funnel shown by Fig. 11, which is constructed throughout of metal, and has been found very useful for the filtration of thick liquids, particularly such that require stirring. It consists of three essential parts: the truncated body of the funnel, an intermediate perforated plate (wire-sieve), held in place by an accurately fitting ring, and resting on the shoulder of the neck, which is expanded and provided with a screw-thread by means of which the different parts are firmly joined and held in place. The filter material (paper, etc.) is cut into disc-shape and stretched over the perforated plate, being held in place by the interposed ring.—Pharm. Ztg., l, No. 98 (1905), 1032.

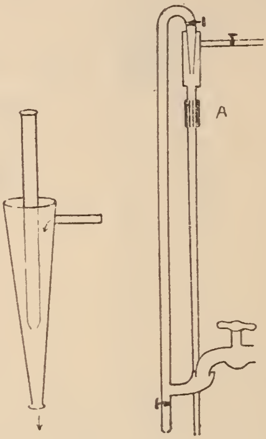
Filter-Pump—Amateur Construction.—Evelyn Wm. Pollard describes a home-made filter-pump, the details of which are shown by the accompanying diagrams (Figs. 12 and 13). A metallic one can be made from an old blow-pipe by boring a hole in the broad end, and soldering into this a tube by which it is joined to the vessel from which the air is to be exhausted. An adapter is attached to the water-tap, and is continued to a tube having a branch to the sink and another to the filter-pump, the latter tube is about four feet long and reaches into the interior of the pump shown enlarged by Fig. 12, by a bend, as shown by Fig. 13. The exit tube, of glass, is joined to the pump at *A* by a rubber connection. Taps are fitted as shown in the diagram, to be opened or closed according to the use that is to be made of the water supply.—Trans. Brit. Pharm. Conf. (Yearbook of Pharm.), 1905, 480.

FIG. 11.



Suction-Funnel.

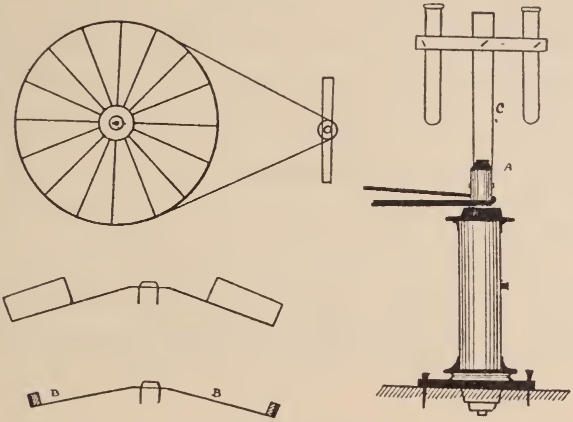
FIG. 12. FIG. 13.



Filter-Pump.

Centrifuge—Amateur Construction.—Evelyn Wm. Pollard describes a home-made centrifuge which can be constructed at small cost by the aid of a bicycle wheel and a bicycle hub, as described by Spurge several years ago. The one shown in the accompanying diagram (Fig. 14), is fixed direct to the floor, and the particular kind of hub used is a Singer back-wheel, in which the cogged wheel is perforated with holes through which screws can be passed. A hole is braced in the floor to take the lower end of the spindle. A number of different-sized containers can be nutted on at *A*. A contrivance for the reception of test-tubes is shown by *B*. This is a light strip of brass turned up at the ends and lined with cork; ordinary test-tubes can be fitted to this by strong rubber bands, and with so light a load a speed of 2000 revolutions can be attained. In addition to this, a vertical extension in the shape of a brass tube *C*, with thread cut to fit the end of the spindle, is provided. Any ordinary clamp can be affixed to this, but the speed is thereby rather lessened.—Trans. Brit. Pharm. Conf. (Yearbook of Pharm.), 1905, 481.

FIG. 14.



Centrifuge.

Wash Bottles—Improved Appliances.—A. Villier has described some practical improvements to wash bottles which are illustrated by Figs. 15, 16

FIG. 15.

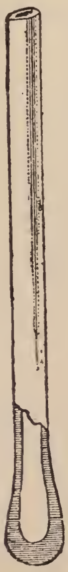


FIG. 16.

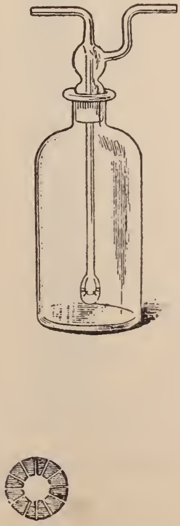
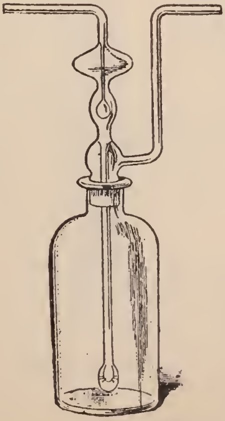


FIG. 17.

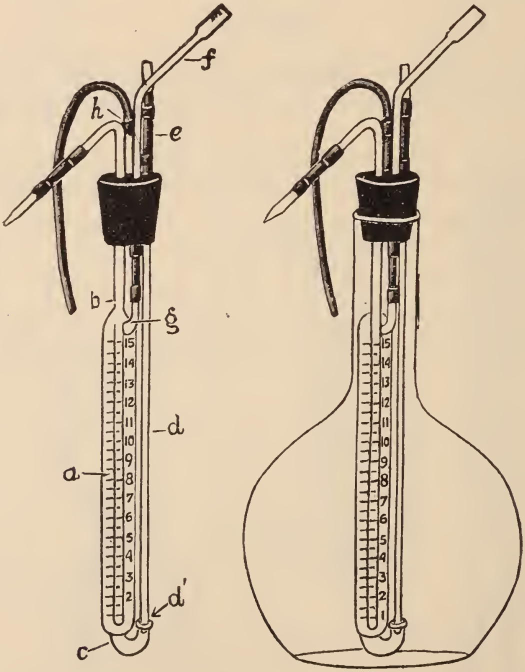


Wash Bottles.

and 17. The inflow tube from the generator is closed at the lower end, thickened out, and expanded ball-shaped, the ball being provided with a number of horizontal holes, arranged stellately, as shown by Fig. 15. This insures the minute division of the outflowing gas and consequently its more rapid and complete washing. The arrangement with such an inflow tube is shown by Fig 16. In order to prevent the return of the washing liquid when for any reason the generation or flow of gas is intercepted, a second improvement has been devised by the author, which is shown by Fig. 17. It consists of a hollow ball-shaped float inserted in the stopper over the outflow tube leading the washed gas from the wash-bottle, and accurately fits into the constriction beneath the surrounding bulbous expansion. The rising liquid carries the float to the constriction and, effectually closing it, prevents the return into the generator.—Pharm. Ztg., l, No. 61, (1905), 760; from Bull. Scienc. Pharm., 1905, No. 8.

Combination Wash-bottle and Pipette—A Novel Contrivance.—It is quite important in many operations to ascertain the amount of wash liquid

FIG. 18.

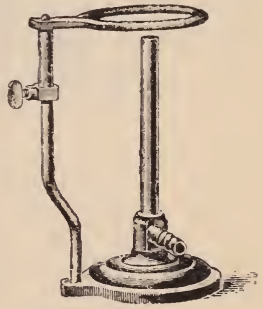


Combination Wash-Bottle and Pipette.

and to avoid an excess when washing precipitates. For this purpose J. W. Hogarth has devised the combination wash-bottle and pipette shown by the accompanying illustration (Fig. 18), the measurements given being those of ths actual apparatus in use. Vessel *a*, of thin glass, 13.3 Cm. long, and 1.4 Cm. wide, is graduated in Cc. and fractions. Tube *b* is 5 Mm. in diameter and 13.3 Cm. long from junction at top of *a* to the bottom, where it just enters *c*. Tube *g* is sealed on to *a*, and is connected to the lower extremity of *f* by a piece of stout rubber tubing. To use the vessel, rod *d* is slightly raised, the water-tight joint at *d'*, whose rod *d* is ground into *c*, is thereby broken, air is blown from the mouth through the rubber tube connected to *h*, which is in direct communication with the air of flask only, until the level of liquid rises to the desired mark in *a*; rod *d* is then released, when it is automatically forced back into position by rubber *e*, which is stretched from the disc on *d* to the out turned edge of a short glass tube through which *d* passes. This liquid is then delivered in the ordinary way by blowing in *f*; as soon as the liquid in *a* falls to the curved tube *c*, liquid ceases to pass up *b*. The vessel, which has a capacity of 15 Cc. delivers any devised volume within that limit to $\frac{1}{5}$ Cc. This apparatus is also shown in the drawihg fitted into an ordinary flask.—Chem. News., Feb. 16, 1906, 71.

Bunsen Burner—Construction with Support.—H. Hanflaud (Berlin), has introduced the convenient form of Bunsen burner shown by Fig. 19, which is provided with an adjustable ring-support for the reception of wire gauze, asbestos board, triangles and vessels to be heated at the desired distances from the the flame.—Apoth. Ztg., xx, No. 60 (1905), 592.

FIG. 19.

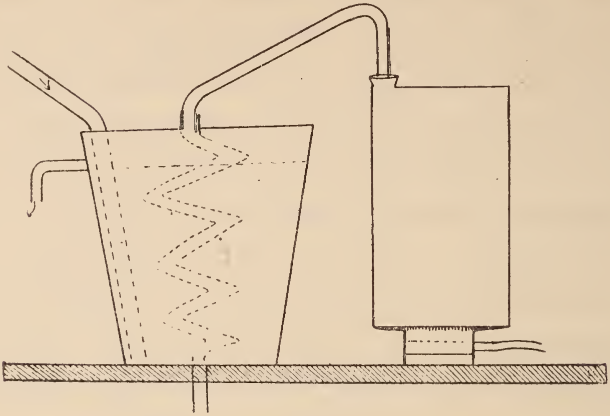


Bunsen Burner.

Evaporation—Value of a current of air blown on the surface of Evaporating Liquids.—S. R. Chatelle records the results of a series of experiments conducted in the School of Pharmacy, University of Kansas, for the purpose of ascertaining the value of a superficial current of air, blown on the surface of a liquid in the process of evaporating the same. Data obtained under conditions mentioned in detail show that a current of air blown on the surface of a liquid will increase evaporation at about 100 per cent.--Proc. Kan. Pharm Assoc., 1905, 60–62.

Water Stills—Cheap Construction.—Evelyn Wm. Pollard describes a water-still which can be cheaply constructed with a 50-lb. glycerin can, as shown by Fig. 20. A bent glass tube, fitted into a cork covered with tin-foil to prevent organic contamination, extends from the still to a glass worm, which can be obtained at any apparatus-house. The worm is fixed in a lard or butter bucket, the cold water entering at the bottom by a tube as shown. Three gallons is put in the tin, the first portion of the distillate being rejected if any ammonia is present in the original water. This apparatus looks crude, but produces excellent distilled water.

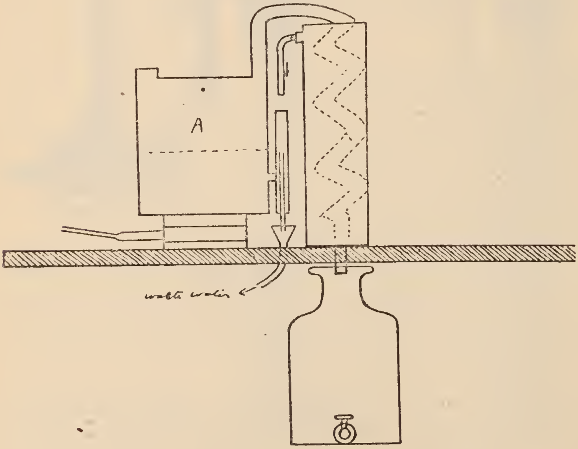
FIG. 20.



Water Still.

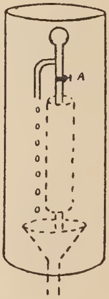
A more elaborate water-still, intended for continuous distillation with automatic water-supply, is shown by Fig. 21. It consists of a round copper boiler about 8 inches high and the same in diameter, holding rather less than a gallon. There are two orifices, 1 inch in diameter and the other a bare ½ inch; at the side is seen the usual constant-level device. The condenser is taller than usual—14 inches by 6 inches—and the worm is made of 9 feet of block-tin tubing of ½-inch clear bore. Cold water

FIG. 21.



Water Still.

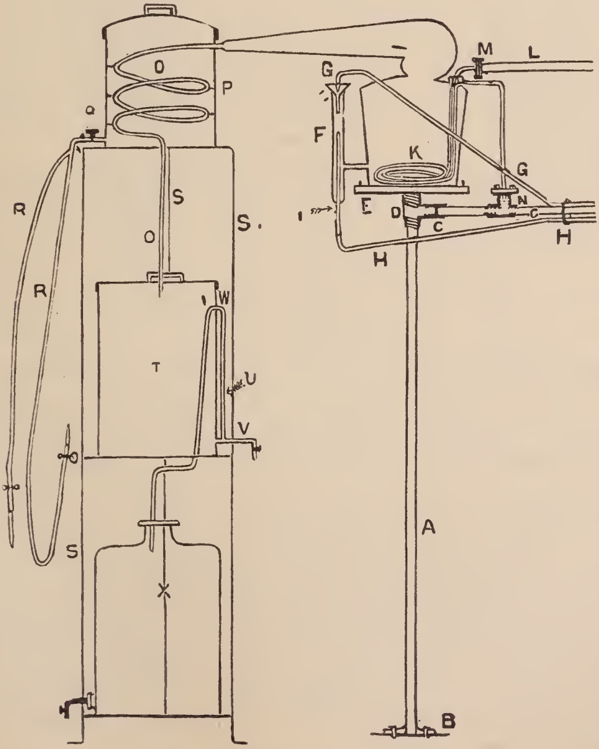
FIG. 22.



Water Still.

enters by a glass tube to the bottom of the condenser; the steam passing through the pipe heats the water at the top to a temperature of 95° C., while the bottom is cool. This hot water overflows back to the still, the excess passing down the central tube to waste. The greatest economy is effected by having the exit-tube of the condenser branched, as shown in Fig. 22. In this the cock *A* can be turned so that the inflow to the still only slightly exceeds the flow of distilled water from the worm; the excess drops over the side into the funnel, and thus to waste. When distilling water only the author does not keep the bottom of the condenser very cool, but allows the water to flow into the collecting-bottle at a temperature of about 80° C., thus largely preventing any ammonia that might be present from condensing, besides saving gas. He has frequently used the still for some hours without any waste water flowing away, the flow into the still exactly equalling the amount of distilled water produced.—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 481–483.

FIG. 23.



Automatic Water-Still.

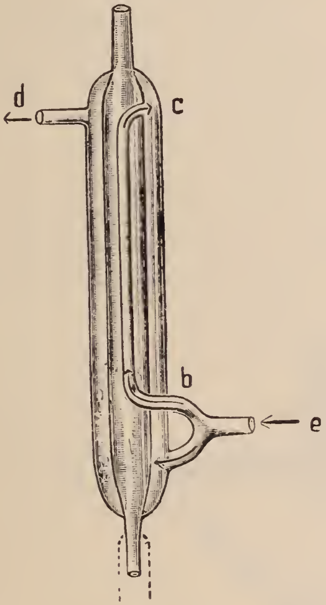
Automatic Water-Still—Details of Construction.— Richard Seligman describes the automatic apparatus for receiving a constant supply of pure distilled water, shown by the accompanying diagram (Fig. 23), which is particularly intended for the experimental laboratory of chemical works, in which it can be cheaply and easily installed by means of an apparatus with which most works-laboratories are already provided, and has in practice given satisfactory results in daily use. The still proper is supported on an upright of ⅞-in. iron (*A*) 3 ft. 6 in. long, held in position on the bench-top by a flange (*B*), and steadied by the waste-steam pipe (*C*), which crosses from the wall at a convenient height. On the top of *A* is a T-joint (*D*), into which the plugged end of *C* is screwed, and which also carries the platform (*E*), on which rests the still. This has a capacity of of five liters, and has a constant-level supply (*F*), to which water is brought by a ⅜-in. compo-pipe (*G*, *G*), carried along the steam-pipe *C*. The overflow is carried off by the pipe (*H*, *H*), likewise suspended from *C*. The pressure in the still is regulated by adjusting the height of the pipe (*I*), which at the same time acts as a safety-valve. Heat is supplied by a flat coil (*K*) of ⅜-in. copper pipe, tinned outside, of which three turns are found to suffice. The coil hangs ½ in. above the bottom of the still—live steam entering through the pipe (*L*) from the boiler, which is joined to the coil by the coupling (*M*). The waste steam passes by the coupling (*N*) to a branch on the pipe *C*, which in its turn is closed by a steam trap of any suitable form.

The neck of the still is soldered into the mouth of the block-tin condensing worm (*O*), which makes three turns in the copper tank (*P*). This is 8½ in. in diameter and 9½ in. high, is well tinned inside, and serves the double purpose of condenser and supply-tank. It stands on a tripod (S. S. S.) 4 feet above the bench, and is filled once a day with the distilled water which has accumulated in the receiving bottle (*X*). The steam passing through the coil *O* heats the water to a suitable temperature for many uses, for which purpose it may be withdrawn by means of the rubber tubes (*R*, *R*), which are provided with pinch-cocks, and are attached to a tap (*Q*) close to the bottom of the tank. A second stage within the tripod *S* supports the tinned copper-tank (*T*), 8½ in. in diameter by 14 in. high, into which the hot water is delivered from the condensing worm *O*. Close to the bottom of this tank is a T-shaped pipe (*V*). The upright arm of this carries a glass-tube (*U*), the horizontal arm a tap for drawing off the cold water when required for use. The glass tube *U* serves the double purpose of gauge and overflow, being bent back on itself at *W* and delivering into the receiving bottle *X*. To prevent syphonage, a minute hole is blown in the tube *U* at the top of the bend *W*.—Chem. News., Jan. 19, 1906, 26.

Double Condenser—Effective Construction.—C. Glatzel has devised a condenser which differs from the ordinary form by providing a double cooling-surface. The construction is so plainly shown by the cut (Fig.

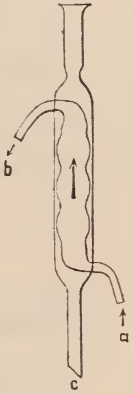
24), that little explanation is needed. The cooling-water enters the condenser through a two-way tube, *b*, one of the branches delivering the water into the jacket surrounding the somewhat expanded condensing-tube, the other passing through the walls of the latter into an inner tube from which the water is delivered at *c* and passes out at *d* with the condensing-water flowing from the jacket. This construction secures the effective condensation of highly volatile fluids, and is particularly useful for reflux condensers in extraction operations.—Apoth. Ztg., xxi, No. 33, (1906), 323; from Chem. Ztg., 1906, 330.

FIG. 24.



Double-Condenser.

FIG. 25.



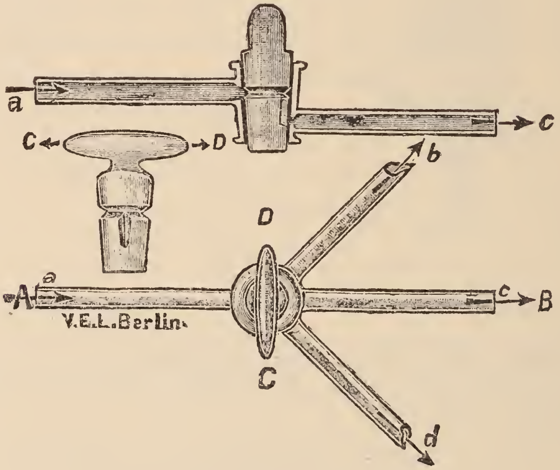
Reflux Condenser.

Reflux Condenser—Practical Construction.—K. Lüdecke has devised the condenser shown by Fig. 25, which combines the advantages of compactness with a large cooling-surface, its total length being only about 20 Cm. Condensation is effected both by the surrounding air and by the circulation of water through an interior tube, the cooling-water being admitted at *a* and escaping at *b*. Being inserted into the neck of the distilling flask, the vapor passes into the condenser at *c*, and meeting a large condensing surface rapidly condenses the vaporized liquid (alcohol, ether, chloroform, or benzol) which returns into the flask without loss during prolonged boiling of solution in these solvents. Under ordinary conditions the position of this condenser is vertical; but if for any reason it is desirable to incline it at an angle, its position should be such that the inflow of cooling-water is beneath the body of the condenser. The condenser perfectly replaces the Liebig's condensers of the ordinary long form.—Pharm. Ztg., l, No. 104, (1905), 1097; from Chem. Ztg., 1905, No. 99.

Apparatus for Home-Made Galenicals—Practical Observations.—M. H. Stiles gives details for the inexpensive construction of stills and percolators suitable for the operations ordinarily involved in the preparation of galenicals and makes practical observations concerning the process of percolation and manipulation as applied to a large number of galenical preparations which can be profitably and conveniently prepared on a small scale. The details must be consulted in the original paper published.—Pharm. Journ., April 14 and 21, 1906, 442 and 467.

Fractionation Cock—A Convenient Device.—A. von Bartal describes the 3-way fractionation cock, which serves as a convenient attachment to the condenser in fractionation experiments, and is equally applicable to the fractionation of liquids and gases. The construction is clearly shown by the accompanying cuts: Fig. 26 showing the little contrivance in longitudinal section; Fig. 27, the cock itself, viewed from the front; Fig. 28, the three-way system viewed from above. In use the inflow tube (*a* and *A*) is attached to the condenser by means of rubber tubing, the three delivery tubes (*b*, *c*, *d*), with receivers. The cock (*C*, *D*) is provided with a horizontal depression forming a complete periphery on a plane with the opening in the inflow-tube, and is provided at one point with a short vertical channel reaching downward to the level of the open-

FIGS. 26, 27 and 28.

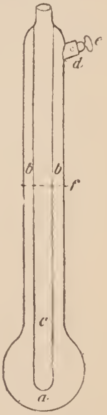


Fractionation-Cock.

ings in the delivery tubes. Communication of the condenser with any one of the delivery tubes is readily established by a simple turn of the cock, and changed from one to the others with the same facility. The little apparatus is also supplied with two instead of three delivery tubes.—Apoth. Ztg., xx, No. 64 (1905), 629; from Chem. Ztg., 1905, 786.

Melting-Points—Efficient Hot-Air Bath.—J. D. Riedel & Co. highly recommend the hot-air bath suggested some years ago by Roth for the determination of melting-points. The apparatus (Fig. 29) consists of a ball-flask, *a*, having a diameter o 65 Mm., with a neck, *b*, 200 Mm. long and 28 Mm. wide, into which a tube *c*, 15 Mm. wide, is fused above and extends to within 17 Mm. of the bottom of the flask. The neck of the flask is provided near the top with a stoppered tubular, *d*, through which sulphuric acid is introduced until it reaches up to about the middle (*f*) of the neck; but on heating the acid it rises considerably higher, so that the mercury in the thermometer placed in the interior of the air-tube is surrounded in its entire length by the acid in the neck of the flask. This insures a uniform temperature throughout the air-bath, and admits of accurate readings when melting-point determinations are made by its aid in the usual manner.—Pharm. Ztg., li, No. 31 (1906), 353.

FIG. 29.



Hot-Air Bath.

Melting-Point Tubes—Useful Device for Attachment to the Thermometer.—In place of the rubber bands commonly employed for fastening melting-point tubes to the thermometer, W. Lenz recommends a metal band composed of a spiral and a thin sheet of some suitable metal, such as German silver, platinum, oxisidium, etc. In order to hold the tube in upright position, the metal sheet is provided with grooves, as shown in the flat view of the band (Fig. 30), while Fig. 31 shows the band expanded into a ring, and by Fig. 32 it is shown in actual use. This ring, like rubber, can be enlarged and compressed, and can therefore be used on thermometers of different calibers; and if made of platinum or iridium, possesses the further advantage over rubber that it can be used in baths of sulphuric acid, etc.—Pharm. Ztg., l, No. 98 (1905), 1031.

FIG. 32.

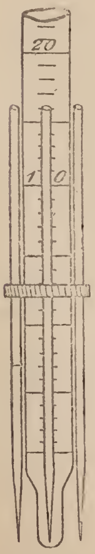


FIG. 31.

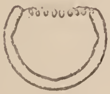
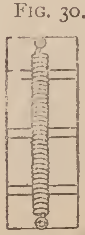


FIG. 30.



Melting-Point Tubes.

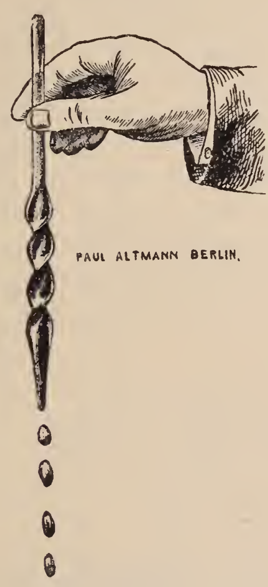
Melting-Points in Capillary Tubes—Difficulty to Make Sharp Determinations.—R. Wegschneider observes that in the determination of melting-points in capillary tubes one hardly ever obtains a sharp melting-point, but more commonly a temperature interval within which the substances melt, since the thermometer usually indicates a higher temperature by the time the substance has completely melted than it did when it began to melt. This is probably due to the fact that the center of the tube is at a lower temperature than the outer layers; a second reason is that the substance may not be quite pure. In the case of substances which decompose at or below their melting-points, the temperature should be raised as rapidly as possible, or else the substance should be introduced into a previously heated melting-point bath, as otherwise the melting-point observed is in reality that of a mixture of the substance with its decomposition products. The author is of opinion that in all such cases the exact conditions under which the melting-point was determined should be recorded. —Pharm. Journ., May 17, 1906, 319; from Chem. Ztg., 1905, *29*, 1224.

Sterilization—Simplicity of Process and Importance.—Prof. C. S. N. Hallberg says that the value of sterilization as a pharmacal process, and its importance in medicine, is not fully recognized. All preparations intended for external use should be sterile as far as practicable. Solutions for hypodermic or subcutaneous injections, collyria, gargles, lotions, injections, sprays, antiseptic solutions generally, surgical dressings, gauze, cotton, etc., should not only be sterilized, but should be dispensed sterile and in a manner to keep sterile as long as possible, or as may be required. There is generally an exaggerated idea as to the application of the process and to the apparatus required. It must be remembered that sterile means absolutely clean and aseptic, free from germs. The vessels, containers and the surroundings must be clean, and the agent to clean them is boiling water. To sterilize, therefore, plenty of boiling water should first be used to wash up everything employed in the operation, to scald out the vessels and especially the containers. The latter should then be carefully covered with sterile material; in the case of bottles, they should be stoppered with sterile glass stoppers. not corks. In preparing a solution, for example, of atropine sulphate, the desired quantity of water is brought to boiling in a sterile flask, the heat removed, and the required amount of atropine sulphate dropped into the hot water, and the flask quickly stoppered. A small filter is placed in a small sterile funnel and filled with boiling water, allowed to drain, and inserted in the sterile container. The solution is now poured into the funnel, which is then covered, and when the liquid has filtered through, the container is stoppered and dispensed.—West. Drugg., Oct., 1905, 635.

Glass Rod—Form Suitable for Removing Small Quantities of Melting Fats.—J. Prescher recommends a glass rod of the form shown by Fig. 33

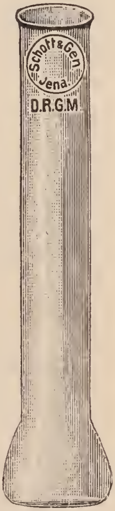
for removing small quantities of melted fats for the purpose of making determinations of the iodine number, saponification number, etc. For this purpose one or two immersions and drainings usually suffice.—Pharm. Ztg., li, No. 20 (1906), 226.

FIG. 33.


PAUL ALTMANN BERLIN.

Glass Rod.

FIG. 34.

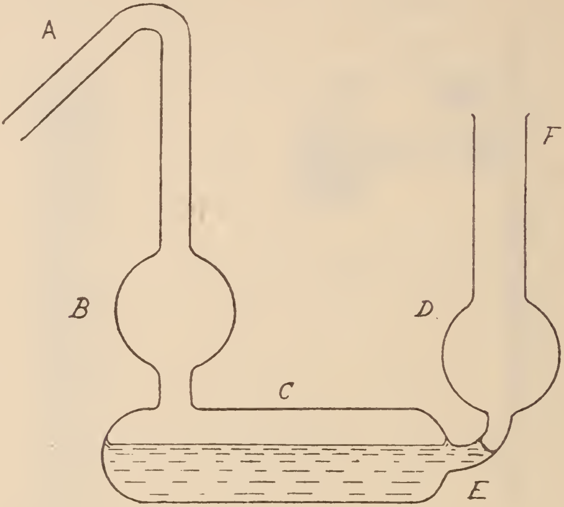


New Test-Tube.

New Test-Tube—Self-supporting Form.—At the suggestion of Prof. Schaer, of the University of Strasburg, the self-supporting test-tube shown by Fig. 34 has been constructed and is now obtainable from dealers. The flat bottom permits its maintenance in an upright position without support so long as the tube is not more than half-filled. These tubes lend themselves conveniently to a variety of uses, such as the observation of serial color-reactions,collection or observation of precipitations, small distillations, etc., for which the test-tube of the ordinary form presents less convenience. They are manufactured by Schott & Co. in Jena.—Apoth. Ztg., xx, No. 54 (1905), 585.

Absorption-Tube—New Form.—In estimating chlorine, ammonia, and other substances in which an absorption-tube is used, it sometimes occurs that the absorbing liquid is carried back into the flask in which the gas is generated. Edgar Philip Perman overcomes this difficulty by the use of a tube constructed as shown by Fig. 35. Convenient dimensions are: (*C*), 1 in. diameter, 3.5 in. long; (*B* and *D*), 1.25 in. diameter. The liquid should just close the narrow tube (*E*). The tube (*A*) is connected with the generating-flask by a rubber, cork, or ground-glass joint, and a guard tube, containing glass beads moistened with the absorbent liquid, may be connected to (F). Under severe tests this tube has never failed.—Chem. News., May 11, 1906, 213.

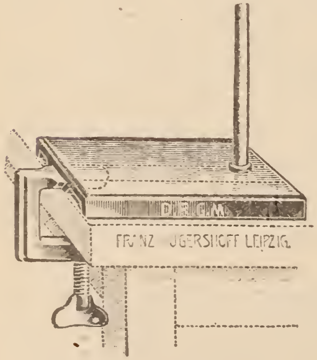
Fig. 35.



Absorption-Tube.

Apparatus Support—Simple Device for Clamping Base Plate to Table. —Franz Hugershoff provides the base plates of retort and the other apparatus supports with a slot into which a clamp may be fitted, and the base firmly attached to the laboratory table-top as shown by the accompanying cut (Fig. 36.)—Pharm. Ztg., l, No. 98, (1905), 1033.

Fig. 36.



Apparatus Support.

Prescription Filling—Rules.—E. Fullerton Cook, after discussing some of the numerous expedients suggested from time to time for the prevention of error in prescription-filling, offers the following: *Rules Governing Prescription Filling*, in the hope that with probably some modifications to fit them for the individual requirements they may prove of use to pharmacists in general:

1. Consider the prescription, as a whole, including dose, incompatibilities, solubilities and method of filling.

2. Remove from the prescription case and place together on the counter, all shop-bottles or containers needed in filling the prescription.

3. Compound the prescription, transfer the product to a suitable container, and make a memorandum on the prescription of any required additions or of any point of special interest.

4. Write the label.

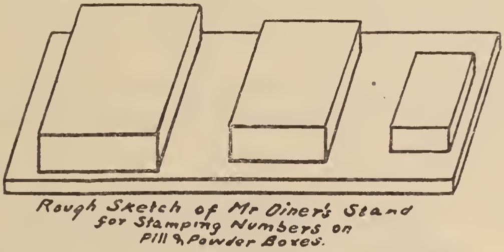
5. Have the label checked by reading it off to a competent attendant, considering the number, date, name, directions and doctor's name, and then check the ingredients of the prescription.

6. Finish the package for delivery, capping all bottles, wrapping and attaching a delivery card bearing the price to be paid.

7. Return all shop-bottles and containers to their proper places.—Proc. Pa. Pharm. Assoc., 1905, 116–118.

Prescription Labels and Boxes—Duplicate Numbering.—In the course of an interview on practical subjects connected with the conduct of his business, Mr. Jacob Diner explained an excellent idea which is followed out in the numbering of prescription labels. This consists in numbering both sides of the label, the practice having been suggested by one of Mr. Diner's junior clerks after long and vain efforts to make out the number of a torn label on a bottle brought back to be refilled. With the number on both sides of the label, if the outside of the label is badly worn, all that is necessary is to look through the bottle at the back of the label. Similarly, the prescription number is also stamped on both sides, bottom and top, of all pill and powder boxes. Using square boxes, a small contrivance like the one illustrated by Fig. 37 is used to place the box on when the stamping is done.*—The Apoth., March, 1906, 186.

FIG. 37.



Prescription Labels and Boxes.

Label or Pill Cabinet—Construction from Cigar Boxes.—F. W. Marshall has constructed the cabinet shown by Fig. 38 from cigar boxes fitted loose in a wooden box or case, which has proven useful for storing labels, pills and other small package goods. Each cigar box is covered with marbled paper and lined on the inside with white paper, the lids being left on the boxes, which are stacked on top of each other in the case. A small brass ring is put in the end of each box, and a label affixed denotes its contents.—Amer. Drugg., Sept. 25, 1905, 170.

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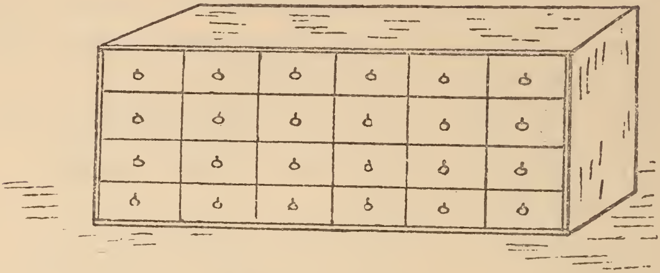
* A series of oblong square blocks of hard wood and of different sizes have been found a convenience for this purpose—the square surface answering for pill boxes, the oblong surfaces for the powder boxes.—REP.

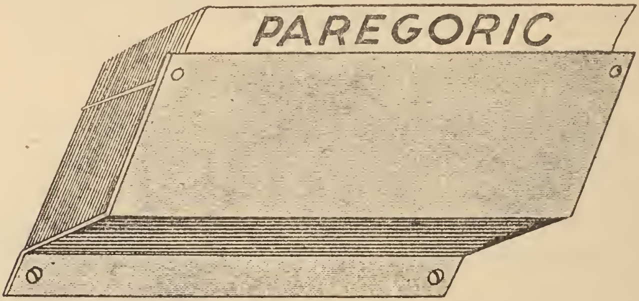
FIG. 38.



Label or Pill Cabinet.

Label Rack—A Novel Device.—W. J. Smith has solved to his satisfaction the problem of keeping labels handy to reach, so arranged that the name may be seen instantly, that the labels can be picked out one at a time quickly without disturbing the rest, and to prevent gummed labels from curling, by the device shown by Fig. 39. A sheet of zinc, tin, or, better still, aluminum, about one inch wide, and a little longer than the label it is intended for, is pierced with small holes at the four corners. The strip is then bent to the shape illustrated in the drawing, the upright part ⅝ to ⅜ inch, the lateral bottom $\frac{3}{16}$ inch, and the narrow section at the bottom also about $\frac{3}{16}$ inch. This is fastened to the edge of the shelf immediately beneath the bottle containing the articles indicated, using short wire nails in the lower and stout pins or longer and thin wire nails in the upper holes, observing that the lateral bottom part shall slant slightly inward and downward, so that it throws up the label in front a little higher

FIG. 39.



Label Rack.

than the others, enabling one to be picked out conveniently without disturbing the rest. By keeping the holder fairly full it will be impossible for gummed labels to curl. Obviously these label-holders may be arranged in groups on a vertical surface, while the dimensions can be varied to accommodate labels of different sizes.—Drugg. Circ., June, 1906, 198.

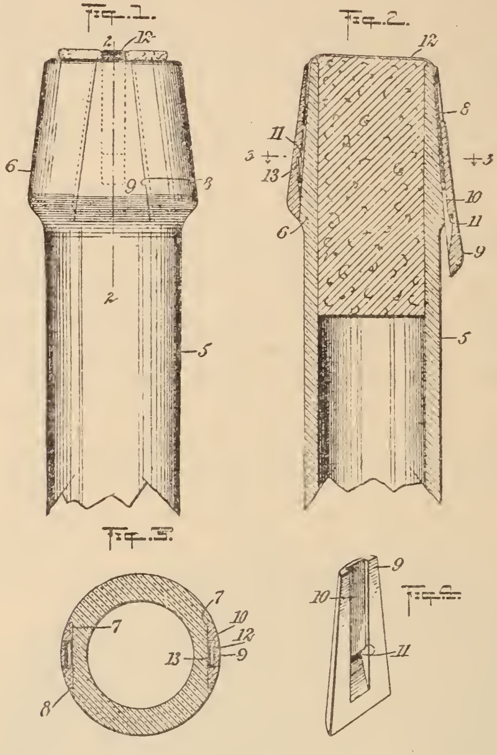
Shop-Labels—Indestructible Coating.—J. W. Sturmer makes some practical suggestions on a kind of varnish, or coating, for the paper labels on shop-bottles, such as are required on the prescription counter, etc. He uses for this purpose a warm aqueous solution of gelatin (about 20 per cent.), which must have about the consistency of honey, so that it may be spread easily with a brush. The label having been pasted on the bottle in the usual way, and allowed to become dry, a coating of collodion is first applied, and then a coating of the gelatin solution. Then, after this has set, but before it has become hard, the gelatin surface is painted over with formaldehyde solution (full strength), when, in the course of half an hour or so, the gelatin surface assumes a glassy hardness, and becomes practically indestructible, remaining unaffected by the action of water, alcohol or acids. To maintain this condition, a fresh application of formaldehyde is made from time to time.—Proc. Indiana Pharm. Assoc., 1905, 22.

Labels on Tins—Method of Securing Adhesion.—Prof. J. W. Sturmer finds the simplest and best method of securing the adhesion of labels on tins, to consist in first painting the surface with an alcoholic solution of a resin—tincture of benzoin, for instance. The label may be then pasted on with dextrin, acacia, or tragacanth mucilage, and will adhere nicely.—Proc. Indiana Pharm. Assoc., 1905, 23.

Corks—Method of Paraffining.—Albert E. Ebert recommends the following process for preparing corks that will resist the action of iodine and most corrosive liquids; melt together one part of paraffin and four parts of petrolatum, and digest the corks in this melted mixture at a temperature of about 140° to 150° F. for a length of time sufficient to thoroughly impregnate them. After being wiped and cooled, the corks are ready for use.—Meyer Bros. Drugg., May, 1906, 127.

Bottle Seals—A New Idea.—Andrew E. Prier has secured a patent (No. 809011) on a new form of bottle seal, which promises to be available in many directions, and, particularly, to solve the troublesome problem of returns. As shown by the accompanying cuts (Fig. 40), reproduced from the patent specifications, the essential feature of the patent consists in two slides fitting into slots on opposite sides of the neck of the bottle. These slots have projecting flanges which retain the slide in place. The interior of the slide is provided with a notch which engages a hook on the end of a metal strap which reaches across the top, confining the cork. The slides being wedge-shape cannot be pushed upward, and the slot engaging the hook on the end of the strap prevents their being shoved downward without breaking the projecting glass flanges on the neck of the bottle which retain the slot in place. The result of this is that the bottle is practically non-refillable. The seal being a portion of the strap which reaches across the top of the cork must be cut in order to open the bottle, and even when this is done the slides will be retained in place, unless they are forced out by breaking the retaining flanges. When this is done the bottle is no longer available and the customer cannot fail to see that the seal has been tampered with.—Amer. Drugg., Febr. 26, 1906, 100.

FIG. 40.



Bottle Seals.

Collapsible Tubes—Simple Apparatus for Filling.—Eschenburg suggests the construction of a simple and inexpensive apparatus for filling collapsible tubes with salves, pastes, etc., by the aid of a small tincture press. It consists of a tinned iron cylinder having a diameter to fit snugly around the plunger of the press closed at the bottom, and provided with a small outlet tube extending horizontally immediately above the bottom. The salve or paste having been introduced into the cylinder under the plunger, it is covered with a disc of parchment paper, whereupon pressure may be applied and the tubes expeditiously filled from the outlet beneath.—Apoth. Ztg., xx, No. 63 (1905), 620.

Injection Bottle—A Practical Device—The glassworks of Von Poncet suppy a useful bottle for dispensing injections, in which the glass stopper, of suitable dimensions, is hollowed out so as to form a conical cup, as shown by the cuts (Figs. 41 and 42). When the injection is to be used, a quantity is poured into the cup, from which it may then be drawn into the syringe. The device presents the further advantage that the cup may be graduated so that a definite and prescribed quantity of medicament may be poured into it, and the conical shape enables its withdrawal to the last drop, so that none of the liquid need be returned to the bottle after contact with the syringe nozzle.—Pharm. Ztg., l, No. 89 (1905), 941.

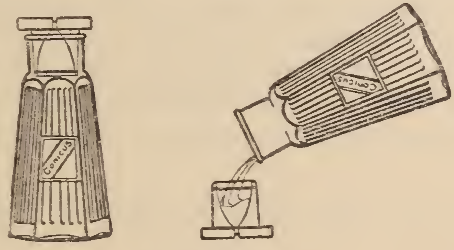


FIG. 41. FIG. 42.

Injection-Bottle.

Home-made Conveniences.—L. Marshall illustrates and describes a number of little conveniences, such as soap cotton, seed case, draining board, suppository and lozenge molds, graduate holders, prescription file, lozenge cutter, etc., which are readily made by the pharmacist with little effort or expense. This paper may be consulted in Merck's Rep., May, 1906, 128–129.

Galenical Preparations—Statistical Report of Results of Examinations in Ireland.—J. E. Brunker communicates tabular statements of the results of his examination of a large number of galenical preparations as analyst of the Poor Law Union of Ireland. Of 2,767 samples of tinctures, only 126 were below the standards; of 261 samples of liquors, only 7, and of 354 samples of liquid extracts, only 15 were below the standard.—Trans. Brit. Pharm. Conf., (Yearbook of Pharmacy), 1905, 494–497.

Medicinal and Chemical Substances.—Commendable Methods of Preservation.—F. A. Upsher Smith, after a systematic review of the methods of preserving medicinal and chemical substances prescribed by the U. S. P., which he regards as highly commendable, calls attention to a large number of substances which seem to require similar precautions, and draws some conclusions, based on his own experience and observations, from which the following may find place here: "With few exceptions it may be taken as a general rule that all medicinal and chemical substances should be stored in a cool place, protected from light, in well-closed bottles. Protection from light, *i. e.*, the chemical or actinic rays of light, whether their source is the sun or any artificial light, is attainable by the use of amber-glass bottles. A dark, rich, reddish amber glass affords a more perfect protection from actinic light than does light-colored amber glass. The use of preservatives is seldom ordered in official pharmacy. It is far better to do without preservatives when possible. Bottles should be as small as is convenient and should be quite emptied before they are refilled. They should stand in a cool place. The worst conditions for storing drugs and chemicals are: In large, white glass bottles, partially filled, on shelves exposed to a strong light and to heat."—Pharm. Journ., Jan. 13, 20 and 27; 1906, 31, 63 and 84.

B. PREPARATIONS.

AQUÆ.

Aromatic Waters—Preparation with Calcined Magnesia.—A writer in "Pharmaceutische Zeitung," over the signature "K," discusses the question of preparing aromatic waters directly from the volatile oil instead of distilling them from the drug, and advocates the former as being preferable, on the ground mentioned below, if they are prepared as follows: Volatile oil, 1.0 Gm.; Calcined magnesia, 5.0 Gm.; Alcohol, 20.0 Gm., are shaken together in a liter flask, which is then filled with boiling distilled water, shaken frequently until completely cooled, and filtered. The advantages of aromatic waters so prepared are: 1. They are perfectly clear from the beginning. 2. They have a pure and powerful odor and taste, because the boiling water dissolves only the aromatic constituents of the volatile oil, while the resinous constituents are combined with the calcined magnesia and remain undissolved. 3. They are quite stable, remaining unchanged for a long time. They may be prepared in any desired quantity, even the smallest.—Pharm. Ztg., li, No. 51 (1906), 565.

Aromatic Waters—Preparation from Volatile Oils by Simple Solution.—W. S. Glass, having some years ago advocated the simple method of preparing the aromatic waters by dissolving volatile oils in hot distilled water in the proportion of 1 minim to the fluidounce, and filling when cold through a double, well-wetted filter, reiterates that when so prepared they not only serve every required purpose, but are in some respects superior to the official (B. P.) aromatic waters obtained by distillation. The use of magnesia, calcium phosphate, talc, cotton, or piece of filter-paper to break up the oil and aid its solution is not necessary.—Pharm. Journ., March. 24. 1906, 344.

Concentrated Aromatic Waters—Official Adoption in the Swiss Pharmacopœia.—While in this country the necessity for the so-called "concentrated aromatic waters" does not exist, since the U. S. P. directs the preparation of aromatic waters, with few exceptions, from volatile oils by the aid of talc, in most European countries concentrated aromatic waters have been in use, and in some of them semi-officially recognized because their respective pharmacopœias direct the preparation of aromatic waters directly from the drug by distillation. It is of interest therefore to learn that concentrated aromatic waters have been adopted by the Swiss Pharmacopœia Commission, the general formula for their preparation being as follows: 50 p. of the finely sliced drug are moistened with 15 p. of alcohol, allowed to stand 24 hours and (after the addition of the necessary quantity of water—? Rep.), 200 parts are distilled off. The distillate is then rectified, the first 50 p. being collected. The concentrated water so obtained represents the drug weight for weight.—Pharm. Ztg., li, No. 26, (1906), 301.

Cherry Laurel Water B. P.—Practical Method of Examination.—In view of the difficulty of making and keeping cherry laurel water, it is found in commerce very variable in composition. H. Wippell Gadd and Sydney C. Gadd therefore consider it essential that pharmacists should examine their stock from time to time, which may be conveniently done as follows: To 1 fl. oz. of the water, in a 4 oz. flask, add two drops of solution of litmus and one drop of solution of potash. Then add, drop by drop, 75 minims of a 2 per cent. solution of silver nitrate, shaking repeatedly, and keeping this solution alkaline by the occasional addition of a drop of solution of potash. A good sample will not be rendered turbid by the addition of less than 75 minims of the silver nitrate solution.—Pharm. Journ., Dec. 30, 1905, 902.

Aqua Hamamelidis—U. S. P. Test for Formaldehyde.—W. A. Puckner finds that when much salicylic acid is used in carrying out the official test for the presence of formaldehyde in hamamelis water, it may fail to detect the presence of as much as 1 part of formaldehyde in 1,000 parts of the preparation. It is important also that the reagent be freshly prepared and that the sulphuric acid shall be of full strength. He therefore suggests the following definite directions be given: "If 1 Cc. hamamelis water be added to 5 Cc. of a freshly prepared solution of 0.01 Gm. salicylic acid in 100 Cc. of sulphuric acid, no red color should appear on standing (absence of formaldehyde.)" The author's experiments have shown that the official formaldehyde test, when properly applied, will show the presence of 1 Gm. of formaldehyde in 10,000 Cc. of a 15 per cent. alcohol.—Amer. Journ. Pharm., Nov., 1905, 501–503.

CARBASSUS.

Bolus-Bandages—Preparation.—The use of bolus alba (white clay) for preparing bandaging material is an innovation recommended by Cohn, who has succeeded in its satisfactory preparation as follows: The calcined white bole is finely powdered, mixed with an ammonia soap prepared by the hot process, and after the addition of 1 per cent. of liquor alumini acetici or ½ per cent. of salicylic acid, absorbent gauze is impregnated with this mixture, which adheres well to the gauze after drying. Bolus-bandages may be sterilized, and have proven an excellent antiseptic material in the treatment of wounds, ulcers, etc.—Pharm. Ztg., l, No. 77, (1905), 815.

Capsicum Wool (Cotton)—Formula.—A. W. Gerrard suggests the preparation of capsicum cotton according to the following formula: Conc. liquid extract of capsicum (see under "fluidextracts"), 2 oz.; absorbent cotton, in thin sheets, 9 oz.; alcohol, 90 per cent., 7 oz. Dissolve the extract in the alcohol, and pour the solution on the cotton, under pressure in such manner that the cotton becomes evenly saturated with the whole of the fluid. Dry the cotton, and preserve it in well-closed cartons. —Trans. Brit. Pharm. Conf., (Yearbook of Pharm.), 1905, 456.

CONFECTIONES.

Confectio Sennæ, B. P.—Practical Observation.—"A Junior Pharmacist," speaking of the preparation of confection of senna, observes that instead of 9 oz. of cassia pulp, 14 oz. of bruised cassia fruits may be taken and "decocted" thoroughly with water. The extract of liquorice is preferably "broken down" in a small quantity of hot water before adding to the other ingredients.—Pharm. Journ., Sept. 30, 1905, 462.

ELIXIRIA.

Elixirs of the Glycerophosphates—Reliable Formulas.—H. A. B. Dunning, discussing the subject of liquid combinations of the glycerophosphates, states that it has been his experience that largely the same difficulties are encountered as with the hypophosphites. Almost the entire trouble in obtaining a permanent liquid preparation of the glycerophosphates is due to the calcium salt, and its instability and incompatibility when in solution. Probably the vehicles that assure the most permanency are strong glycerin solutions or heavy saccharine liquids. He recommends the following formula for the preparation of

Compound Elixir of Glycerophosphates:

Calcium glycerophosphate	128 grains.
Sodium glycerophosphate	128 grains.
Iron glycerophosphate	16 grains.
Manganese glycerophosphate	16 grains.
Quinine glycerophosphate	8 grains.
Strychnine glycerophosphate	1 grain.
Glycerin	2 ounces.
Syrup	2 ounces.

Alcohol	1 ounce.
Sodium citrate	½ ounce.
Hypophosphorous acid, 50 per cent.	5 minims.
Water, sufficient to make	1 pint.
Oil of orange, or other flavoring, sufficient.	

The calcium glycerophosphate is rubbed smooth with glycerin and then 6 ounces of water added. To this solution is added the sodium glycerophosphate, dissolved in one-half ounce of hot water. The iron glycerophosphate, manganese glycerophosphate, and sodium citrate are mixed with one ounce of water and heated until dissolved. The quinine glycerophosphate and strychnine glycerophosphate are mixed with one-half ounce of water and, having added the hypophosphorous acid, is warmed until solution is effected. These solutions are then all mixed together, the syrup poured in, and the alcohol and enough water added to make 16 ounces.

Elixir of Calcium and Sodium Glycerophosphates may be made by the same formula, by leaving out the iron, manganese, quinine, and strychnine salts, and also the sodium citrate.

Iron and Manganese Peptonate with Glycerophosphates has been very satisfactorily made by the author according to the following formula:

Sodium glycerophosphate	160 grains.
Strychnine glycerophosphate	½ grain.
Water	1 ounce.
Iron and manganese peptonate solution (Proceedings, 1905, 397), q. s.	1 pint.

Dissolve the sodium glycerophosphate in 7 drachms of water by heat and carefully neutralize with caustic soda solution. Dissolve the strychnine glycerophosphate in one drachm of water. Mix the two solutions, and add the iron and manganese peptonate solution sufficient to make one pint.—Bull. Pharm., April, 1906, 157–159.

Compound Elixir of Glycerophosphates—Modification of Formula.—Further experience having pointed out the objection to the use of hypophosphorous acid and of a citrate in his formula for Compound Elixir of Glycerophosphates (see above), Mr. Dunning suggests a modification in which *the hypophosphorous acid is replaced by 45 minims of lactic acid*, the sodium citrate is omitted, and the syrup is replaced by glycerin, taking four ounces of the latter however instead of two ounces. The

Elixir of Calcium and Sodium Glycerophosphates is to be prepared with the same modifications.—*Ibid.*, June, 1906, 245–246.

Elixir of Glycerophosphates of Calcium and Sodium — Formula. — Reginald Edgar Dyer recommends the following formula for preparing an elixir of glycerophosphates of calcium and sodium:

Calcium glycerophosphate	64 grains.
Sodium glycerophosphate	128 grains.
Glycerin	3 ounces.
Water	1 fluidounce.
Elixir, sufficient to make	16 fluidounces.

Dissolve the sodium glycerophosphate in the glycerin by the aid of moderate heat; dissolve the calcium glycerophosphate in the water; add to this solution twelve fluidounces of elixir, and then the solution of sodium glycerophosphate and, after standing, filter.

Compound Elixir of Glycerophosphates may be prepared from this by the following formula:

Iron glycerophosphate	32 grains.
Potassium glycerophosphate	32 grains.
Elixir of glycerophosphates of calcium and sodium, sufficient to make	16 fluidounces.

Rub the glycerophosphates in a mortar with the elixir until dissolved.—Pract. Drugg., Dec., 1905, 265.

Elixir Glycerophosphate of Lime and Soda—Formula for a Stable ana Palatable Preparation.—Wm. C. Kirchgessner, after experimenting with citric acid, citrates and phosphoric acid, by themselves and in combination, to produce a permanent solution of glycerophosphates in form of elixir, found the following formula to produce a preparation that will keep and is palatable:

Sodium glycerophosphate	128 gr.
Calcium glycerophosphate	64 gr.
Acid phosphoric, 85 per cent	2 fluidrams.
Simple syrup	4 fluidounces.
Fluid orange	2 fluidrams.
Prune juice, q. s. for fluid pint.	

Dissolve the calcium glycerophosphate in two fluidounces of prune juice with the phosphoric acid previously added, and dissolve the sodium glycerophosphate in the remaining prune juice previously mixed with the syrup and fluid orange. Mix the two solutions and filter if necessary.—The Apoth., Jan., 1906, 45.

Elixir Taraxaci Compositum, N. F.—Improved Formula.—Paul Caldwell observes that the National Formulary very suggestively notes that "if a precipitate should make its appearance in this preparation, it ought to be removed by filtration." To render such a process unnecessary, proceed thus: Mix the fluidextracts with the tinctures and add glycerin equivalent to 5 per cent. of the total finished product. Filter with the aid of magnesium carbonate, returning the filtrate to the filter until it passes entirely soluble in water, when it may be added to the elixir. A permanent preparation will result.—Drugg. Circ., May, 1906, 159.

Liqueurs and Cordials—Conditions of Successful Preparation.—T. Arthur McCoy contributes an interesting paper on the manufacture of liqueurs and cordials, a line of preparations which, although commonly used, are seldom produced by the pharmacist. These include the liqueurs known as benedictine, chartreuse, kümmel, curacoa, and almond liqueur, for which he gives formulas by which products very nearly duplicating the original preparations are obtained. In following them it is necessary to use the best sugar and oils obtainable, the latter to be furnished by the producer if possible so as to secure absolute freshness, purity and quality. For clarification filtration through flannel or felt is resorted to, and is regarded as being more efficient than filtration through paper; but even with the best of these media it is necessary to return the filtrate several times. Talc is used as a clarifying agent, which should be in contact several days before the actual filtration. All the operations are simple, but the following rules have to be observed in all cases: 1st. All mixtures should be heated. 2nd. Keep the product dark. 3rd. Keep in a warm place. 4th. Exclude air. They are heated to ripen the boquet flavor, this having the effect similar to age, by which all are improved. The following formulas may serve as examples here:

Benedictine No. 1.

Bitter almonds, 40 Gm.; powd. nutmeg, 4.5 Gm.; extr. vanilla, 120 Gm.; powd. cloves, 2 Gm.; lemons (sliced), No. 2; true saffron, 0.6 Gm.; sugar (rock-candy), 2000 Gm.; boiling milk, 1000 Cc.; alcohol (95 per cent.), 2000 Cc.; distilled water, 2500 Cc. Mix. Let stand nine days with occasional agitation. Filter sufficiently.

Benedictine No. 2.

a. Ess. benedictine, 75 Cc.; alcohol (95 per cent.), 1700 Cc. Mix.

b. Sugar (rock-candy), 1750 Gm.; distilled water, 1600 Cc. Dissolve. Mix *a* and *b*. Color with caramel. Filter sufficiently.

NOTE.—This liqueur should be at least a year old before used.

Essence of Benedictine. (For Benedictine No. 2.)

A. Myrrh, 1 Gm.; decorticated cardamom, 1 Gm.; mace, 1 Gm.; ginger, 10 Gm.; galanga, 10 Gm.; orange peel, 10 Gm.; ext. aloe, 4 Gm.: alcohol, 160 Gm.; water, 80 Gm. Mix. Macerate ten days and filter.

B. Ext. licorice, 10 Gm.; sweet spirit of nitre, 200 Gm.; acetic ether, 30 Gm.; spirit of ammonia, 1 Gm.; cumarin, 0.12 Gm.; vanillin, 1 Gm. Mix.

C. Oil lemon, 3 Gm.; oil orange-peel, 3 Gm.: oil wormwood, 2.5 Gm.; oil galanga, 2 Gm.; oil ginger, 1 Gm.; oil anise, 15 drops; oil cascarilla, 15 drops; oil bitter almond, 12 drops; oil milfoil, 10 drops; oil sassafras, 7 drops; oil angelica, 6 drops; oil hyssop, 4 drops; oil cardamom, 2 drops; oil hops, 2 drops; oil juniper, 1 drop; oil rosemary, 1 drop. Mix.

Mix *A*, *B* and *C*. This essence should stand two years before being used for preparing the liqueur.—Proc. Mass. State Pharm. Assoc., 1905, 63–67.

EMPLASTRA.

Capsicum Plaster—Formula.—A. W. Gerrard recommends the preparation of a capsicum plaster by the following formula: Conc. liquid extract of capsicum (see under "Fluidextracta"), 10 parts; resin plaster, 95 parts. Evaporate the alcohol from the liquid extract over a water-bath and stir it into the melted resin plaster.—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 455.

EMULSA.

Compound Emulsions of Cod-liver Oil—Formulas.—The following formulas have been adopted by the Antwerp Apothecaries Society for several compound emulsions of cod-liver oil in current demand:

Lecithin—Emulsion of Cod-liver Oil.—Emuls. Ol. jecoris, 100.0; lecithinum, 0.5.

Thiocol—Emulsion of Cod-liver Oil.—Emuls. Ol. jecoris, 100.0; thiocolum, 3.0.—Pharm. Ztg., li, No. 3 (Jan. 10, 1906), 30.

Emulsion of Cod-liver Oil with Glycerophosphates—Formula.—Reginald Edgar Dyer recommends the following formula for preparing an emulsion of cod-liver oil with glycerophosphates:

Calcium glycerophosphate	64 grains.
Sodium glycerophosphate	64 grains.
Condensed milk emulsion of cod-liver oil	1 pint.

Reduce the glycerophosphates to a fine powder and triturate with the emulsion.

Condensed milk has been found by the author to be an excellent emulsifier for cod-liver oil. The

Condensed Milk Emulsion of Cod-Liver Oil to be used in the preceding formula is to be prepared as follows:

Cod-liver oil	8 ozs.
Condensed milk	3 ozs.
Glycerin	3 ozs.
Water	2 ozs.
Oil almonds, essential	15 min.
Oil wintergreen	5 min.

Rub the condensed milk in a dry mortar and gradually add the cod-liver oil, rubbing thoroughly until all is added. To this add the flavoring oils, then the water and lastly the syrup, rubbing them all well together. This forms a basis to which other ingredients may be added to make various combinations.—Pract. Drugg., Dec., 1905, 265.

Petromul—A Good Petroleum Emulsion.—Frederick E. Neice recommends the following formula for a petroleum emulsion, which he considers a good cod-liver oil substitute. It is bland, stable, nutritive (? Rep.) and palatable.

Petroleum, liquid amber	4 ozs.
Pulv. acacia	4 ozs.
Oil of bitter almonds	3 drops.
Oil of cloves	3 drops.
Glycerin	1 oz.
Calcium hypophosphite	45 grains.
Sodium hypophosphite	85 grains.
Potassium hypophosphite	85 grains.
Acid hypophosphorous, 50 per cent	½ dram.
Saccharin	5 grains.
Water, q. s.	16 ozs.

Place the petroleum and oils in a dry mortar, add acacia and triturate to homogeneity, then add and triturate thoroughly four ounces of water. In three ounces of warm water dissolve the salts, acid, and mix with the above. Add the glycerin, dissolve saccharin in a little water and add, mix, then water to make one pint.—The Apoth., Jan., 1906, 45.

Emulsio Petrolei et Glycerophosphatis—Formula.—The third edition of the collection of formulas issued by the Bournemouth Pharmaceutica Association just published includes among other new formulas the following for an "emulsion of petroleum with glycerophosphates."

Liquid paraffin	2 fl. ounces.
Gum acacia, in powder	1 ounce.
Calcium glycerophosphate	24 grains.
Magnesium glycerophosphate	12 grains.
Potassium glycerophosphate	12 grains.
Sodium glycerophosphate	12 grains.
Citric acid	5 grains.
Spirit of chloroform	2 fl. drachms.
Tincture of lemon	1 fl. drachm.
Elixir of saccharin	24 minims.
Distilled water, sufficient to produce	6 fl. ounces.

Triturate the liquid parraffin with the powdered gum and add, all at once, distilled water, 1½ fluidounces. Dissolve the glycerophosphates and the citric acid in distilled water, 1 fluidounce; then add the other ingredients, mix the whole with the emulsion, and add sufficient distilled water to make up the required quantity. Dose: 1 to 4 fluidrachms.—Pharm. Journ., Mar. 31, 1906, 385.

Emulsion of Formalin—Formula.—Albert E. Ebert recommends the following formula for an emulsion of formalin for use as a disinfectant and sanitary wash:

Solution of formalin, 40 per cent	1 fl. oz.
Glycerin	2 fl. ozs.
Water	13 fl. ozs.
Tragacanth, powder	60 grs.

Triturate the tragacanth with the glycerin to a smooth paste; mix the formalin with the water, add to the gum solution and strain with pressure through muslin.—Meyer Bros., Drugg., Aug., 1905, 274.

Emulsion of Silver Iodide—Preparation and Uses.—See *Nascent Silver Iodide* under "Inorganic Chemistry."

EXTRACTA.

Standardized Powdered Alcoholic Extracts — Stramonium Seeds and Leaf.—In continuation of their researches on the preparation of standardized powdered alcoholic extracts, E. H. Farr and R. Wright give an account of their investigation of the relative merits of stramonium seeds and leaves for the preparation of the official extract. While the B. P. recognizes the efficiency of the leaves for preparing the tincture, it still adheres to the seeds for the preparation of the extract. This cannot however, be regarded as an ideal preparation, nor can it be claimed for the seeds that they form a satisfactory basis upon which to construct a formula for a standardized powdered extract. The chief objection to their use lies in the fact that they contain from 15 to 30 per cent. of a fixed drying oil, which is peculiarly apt to become rancid when the seeds are kept, and the absence of which from the preparation thereof cannot be ensured without resorting to prior treatment of the drug with a special solvent. So far as alkaloidal strength is concerned, both seeds and leaves are equally adapted, and such being the case there is no reason why the seeds should be retained in the Pharmacopœia, more particularly as a leaf extract is in every way preferable to a seed extract. Leaving the details of the experimental work, which has followed very closely the lines on which the work upon other mydriatic drugs has been carried out by the authors (see Proceedings, 1905, 561), for consultation in the original paper, the following results and deductions may find place here:

The average yield of alkaloid by the seeds and leaves grown in England is precisely the same, viz., 0.22 per cent. In 15 samples of seeds examined during the last 15 years, the maximum yield was 0.28 per cent., the minimum 0.16 per cent. In 8 samples of the leaves examined during the past few years, the maximum yield was 0.30 per cent., the minimum 0.12 per cent. The average yield of alkaloid by five samples of the official

Extract of Stramonium Seed, was 1.54 per cent., the maximum yield being 2.32 per cent., the minimum 0.80 per cent. The proportion of alkaloids present in a dry alcoholic extract of the seeds, however, varies remarkably according to the degree of comminution of the seeds. If the *coarsely powdered seeds* be exhausted by percolation with alcohol a smaller yield of extract is obtained, but as practically all the alkaloid is taken out in the process the amount present in the extract is relatively large; but if the seeds are reduced to *fine powder* and treated with the same menstruum, a greater yield of extract is the result, the alkaloidal strength being correspondingly reduced. In the case of the coarse powder an average of 0.69 parts of extract, containing 4.6 per cent. of alkaloid, was obtained, as against 1.29 parts of extract, containing 1.86 per cent. of alkaloid, from the same quantity of seeds in fine powder. Another condition of variation worthy of note is due to the fact that, contrary to the general rule, the extracts of the seeds prepared with 70 per cent. and 50 per cent. alcohols, are relatively richer in alkaloid than the extract made with 90 per cent. alcohol. The explanation is that in the latter case the fixed oil of the seeds (amounting to from 16.7 per cent. to 32 per cent. according to different authorities) goes into solution in the spirit, and in the others it does not. The actual experiment showed that the average alkaloidal content in extract of the seeds made with 90 per cent. alcohol was 3.00 per cent., with 70 per cent. alcohol, 4.27 per cent., and with 50 per cent. alcohol, 4.09 per cent.

Extract of Stramonium Leaf, prepared by the authors from time to time showed in six samples an average content of 1.29 per cent. of alkaloid, the maximum being 1.91 per cent., the minimum 0.72 per cent. Experiments made to determine the effect produced on the alkaloidal content by different solvents showed an average of 2.31 per cent. in the dry extract when made with 90 per cent. alcohol, 1.59 per cent. with 70 per cent. and 1.13 per cent. with 50 per cent. alcohol. From these figures it is evident that for a dry alcoholic extract of the leaves a standard of 1 to 2 per cent. should present no difficulty. Another interesting fact brought out by these investigations, assuming the figures of the authors and these cited from American authorities to be correct, is that the American stramonium contains practically twice as much alkaloid as the British.—Pharm. Journ., Mar. 17, 1906, 310–312.

Moist Extracts—Effect of Heat in India.—Referring to the observations of Farr and Wright in their paper on "Standardized Alcoholic Extracts," (see Proceedings, 1905, 561), that many extracts become sticky after being kept a short time—due to the tendency to absorb moisture, R. Reavley states that in India, where the temperature is 80° F., and when in many places for at least two months of the year the thermometer often reaches considerably over 100° F., the various moist extracts lose a great deal of their moisture. Experiment made with a number of narcotic extracts and extract of nux vomica, show a loss of moisture, quite considerable in some instances, and of course a corresponding increase in alkaloidal strength.—Pharm. Journ., Dec. 2, 1905, 755.

Extracts of Belladonna and Hyoscyamus—Interference of Chlorophyll in Assay.—K. Dieterich calls attention to the difficulty of recognizing the color reaction of eosin in titration of the alkaloidal extractions when conducting the assay of extracts of belladonna and hyoscyamus by the method of the G. P., IV., the reaction being obscured by the green color of the extractive, due to chlorophyll. He finds the method of Thoms, suggested in 1903 to overcome this difficulty. The green chloroformic extract is dissolved in water, the chlorophyll removed by filtration, washed with water, and the aqueous solution, having been brought to the specified volume, is then further treated in the prescribed manner.—Pharm. Ztg., l, No. 64 (1905), 672; from Helfenberger Annales.

Extracts of Belladonna and Hyoscyamus—Gravimetric Alkaloidal Determination.—Philipp Röder recommends the following gravimetric method for the alkaloidal assay of the extracts of belladonna and hyoscyamus: 6 Gm. of the extract are weighed on a piece of smooth paper, which are together placed into a 200 Cc. flask, macerated with 6 Cc. each of water and ammonia water for about half an hour and then shaken occasionally for 1 or 2 hours with 120 Gm. of a mixture composed of alcohol 1, chloroform 3, and ether 7 parts. After complete subsidence, 100 Gm. of the ethereal solution (= 5 Gm. extract) are carefully decanted and shaken out successively with 30, 10, 10, 5 and 5 Cc. of 3 per cent hydrochloric acid. The united acid solutions are washed twice with 10 Cc. of chloroform, then supersaturated strongly with ammonia water and shaken out with five portions of 10 Cc. each of chloroform. The chloroformic solution is evaporated in a weighing flask, the residue dried during 3 hours and weighed. Multiplication of the weight so ascertained gives the percentage of alkaloid in the sample.

Extract of Nux Vomica may be assayed in practically the same way.—Pharm. Ztg., LI, No. 28 (1906), 322.

Liebig's Extract of Beef—New Constituents.—Fr. Kutscher has determined the neurine and choline in Liebig's extract of beef; but neither of them seem to be invariable constituents of the extract.—Pharm. Ztg., LI, No. 46 (1906), 514; from Ztschr. f. Unters. d. Nahrungsm., 1906, No. 10.

Extractum Chinæ Spirituosum, G. P., IV.—Separation of Resinous Matter.—A correspondent (B) of the "Pharm. Ztg." calls attention to the formation of resinous lumps during the evaporation of the extract of cinchona by the process of the G. P., IV, after all the alcohol has been vaporized. This resinous matter is scarcely bitter, but amounted in an experiment to almost 50 per cent. of the total extract.—Pharm. Ztg., LI, No. 6 (1906), 77.

Aqueous Extract of Ergot—Method of Obtaining an Efficient and Reliable Preparation.—See *Ergot*, under "Materia Medica."

Extract and Fluidextract of Ergot—Identification According to the Austr. Pharm., VIII.—The new Austrian Pharmacopœia (VIII) prescribes the following tests for the identification of extract and fluidextract of ergot: The aqueous solution (1 : 10) of the extract should produce precipitates both with tannic acid and with mercuric chloride solution. If 0.5 Gm. of the fluidextract in 5 Cc. of water is made alkaline with ammonia and then shaken out with ether, a residue is obtained on the evaporation of the ether solution, which, when dissolved in concentrated acetic acid containing 0.1 per cent. of ferric chloride, develops a violet-blue zone at the point of contact with a layer of concentrated sulphuric acid.—Pharm. Ztg., LI, No. 28 (1906), 322.

Extractum Euonymi Siccum, B. P.—Commercial Quality.—The great variation found by W. B. Cowie and William Dickson in the composition of unofficial resinoids in common use (see under "Resinæ") led them to examine four commercial samples of the official dry extract of euonymus, with results shown in the following table:

	Sample A.	Sample B.	Sample C.	Sample D.
Soluble in 45 per cent. alcohol	73.62	60.66	67.46	60.76
Moisture	4.30	4.30	5.79	6.33
Ash (dried extract)	30.20	22.90	25.53	26.93
Composition of ash—				
Ca_32PO_4	87.29	89.38	78.68	91.70
$Mg_2P_2O_7$	Trace	Trace	Trace	Trace
Fe_22PO_4	Trace	Trace	Trace	Trace
$CaCO_3$	0.66	1.94	0.64	
$MgCO_3$	2.19	1.17	13.32	1.24
$MgCl_2$	0.27	Trace	Trace	Trace
KCl,NaCl	9.57	7.28	6.22	5.66
SiO_2	0.02	0.23	0.24	1.40
CuO	. . .	Trace	0.90	
	100.00	100 00	100.00	100.00

Deducting the amount of ash contained in the natural extract, viz., 3.66 per cent., the sample B and C, may be regarded as coming within the limit of the B. P., which directs, although in ambiguous terms, the addition of calcium phosphate; in samples A and D this addition is too high. When examined under the microscope no characteristic impurities could be detected. The presence of copper in two of the samples may be accounted for by the use of copper evaporating vessels.—Pharm. Journ., March 10, 1906, 281.

Commercial Stick Licorice—Examination.—H. W. Noble communicates the method and results of the examination of eight samples of stick licorice all bought in Newcastle, two ordinary trade samples of block juice and a sample of Ext. Glycyrrhizæ, B. P. The results are exhibited in the following table:

	No	Moisture at 212°.	Ash.	Glycyrrhizin.	Insol in Cold Water.	Insol. Residue.
		Per cent.	Per cent.	Per cent.	Per cent.	
Stick Licorice	1	13.71	3.87	4.93	22.5	Starch with very little tissue.
Stick Licorice	2	13.05	4.32	5.23	30.47	Starch and woody tissue.
Stick Licorice	3	13.82	6.30	5.40	20.0	Starch and woody tissue.
Stick Licorice	4	13.24	7.22	5.50	19.0	Starch and woody tissue.
Stick Licorice	5	13.38.	6.00	5.92	25.76	Starch and woody tissue.
Stick Licorice	6	12.67	4.80	10.26	22.0	Adulterated, very little tissue.
Stick Licorice	7	13.88	6.64	4.24	21.0	Starch and woody tissue.
Stick Licorice	8	12.24	5.72	5.28	27.3	Starch and woody tissue.
Extr. Glycyrrh., B. P. ..	..	20.50	5.85	5.67	5.06	Practically soluble.
Block Juice.............	1	20.53	6.46	17.07	6.86	Starch.
Block Juice.............	2	19.20	6.23	14.08	13.25	Starch.

The most notable feature of the series is the fact of how closely they agree to one another in various particulars. The small yield of glycyrrhizin in the sticks and the large yield in block juice requires some explanation, and the author will try to get further information on this point. —Pharm. Journ., April 28, 1906, 494.

Extract of Malt, U. S. P. VIII—Criticism.—E. C. Woodcock observes that the extract of malt of the eight decimal revision of the U. S. P., "like Rip Van Winkle, has slept for twenty years, and is, as our friend Rip found himself, rather antique." No advancement has been made whatever: the formula and process are practically the same, and "the products is still in the slough of thick honey;" and, although diastase is the most important constituent and one whose power can be easily estimated, it is not even mentioned. But it is quite possible to make a malt extract with a goodly proportion of diastase and yet produce a preparation of elegant appearance, which can be filtered bright from the insoluble particles of the malt, which must necessarily be present in the crude extract. Such an extract would have the consistency, not of thick honey, but of a thin syrup; or, to speak more accurately a preparation with a specific gravity of, say, 1.28, and standardized to contain enough diastase to produce by its action on starch paste six times its weight of maltose, or more if necessary.—Amer. Drugg., Dec. 11, 1905, 317.

Powdered Extract of Nux Vomica—Improved Method of Assay.—Finding the methods in use for the assay of solid extract and liquid extract of nux vomica to have some disadvantages when used for the powdered extract, Walter H. Lenton has worked out the following method on similar lines to the process of Bird using a hydro-alcoholic solvent for the powder, and shaking out with a mixture of ether and chloroform.

Powdered extract of nux vomica	2 Gm.
Ether, 0.720	10 Cc.
Chloroform	10 Cc.
Alcohol, 90 per cent	5 Cc.
Strong Solution of Ammonia	3 Cc.
Distilled Water	5 Cc.

Place the ether and chloroform in a dry separator and add the powder. Next add the alcohol and solution of ammonia and shake well. Finally add the water and shake vigorously for about a minute; allow to separate, and draw off the ether-chloroform layer into another separator, and agitate well with 5 Cc. of solution of ammonium carbonate (1 in 10), as recommended in Bird's process. Separate and repeat the agitation with another 5 Cc. of solution of ammonium carbonate, and draw off the washed ether-chloroform layer into a clean separator, preserving the two wash liquors separately for subsequent washings. To the alkaline mother-liquor add ether and cholroform (10 Cc. of each), agitating and separating as before, and washing the ether-chloroform solution with the reserved wash-liquors. Repeat the extraction and washings a third time. Then extract the mixed ether-chloroform solutions and proceed as usual for strychnine determinations.—Pharm. Journ., Dec. 23, 1905, 864.

FLUIDEXTRACTA.

Liquid Extract of Belladonna, B. P.—Simple Process of Assay.—H. Wippell Gadd and Sidney C. Gadd, among other simple processes of assay adopted for the dispensing-counter, recommend the following for liquid extract of belladonna: Take of

Liquid extract of belladonna	150 minims.
Water	10 fl. drachms.
Diluted sulphuric acid	150 minims.
Chloroform	5 fl. drachms.

Place these in a separator, having a capacity of 5 fl. oz. Shake. Warm gently by holding in the steam of boiling water. Allow the chloroformic layer to run into another separator of the same capacity. Repeat the process with a second measure of 150 minims of chloroform. Wash the mixed chloroformic solutions with a mixture of 15 minims of diluted sulphuric acid, and 1 fl. drachm of water. Return the washings to the original liquid in the first separator. Reject the chloroformic solution. Next, to the original liquid in the first separator add 150 minims of chloroform and a decided excess of solution of ammonia. Shake. Separate the chloroformic solution. Twice repeat the agitation with chloroform and separation. Shake the mixed chloroformic solutions with 75 minims of diluted sulphuric acid, mixed with 150 minims of warm water. Separate the chloroformic solution and repeat the agitation with acidulated water. Wash the mixed acid liquid with 45 minims of chloroform, then agitate with 150 minims of chloroform and an excess of solution of ammonia. Separate the chloroformic solution, twice repeat the agitation with chloroform and the separation. Wash the mixed chloroformic solutions with 75 minims of water containing one drop of solution of ammonia. Draw off the chloroformic layer into a counterpoised dish, evaporate in a water-bath. Dry the residue below 212° F. Weigh. The residue should be crystalline and almost colorless, and should weigh one grain.—Pharm. Journ., Sept. 30, 1905, 438.

Liquid Extract of Capsicum, 2:1—Formula and Uses.—Having determined by experiment that 90 per cent. alcohol is superior to all other solvents for extracting the active principle of capsicum (which see under "Materia Medica"), A. W. Gerrard recommends the following formula for preparing a liquid extract: Take of capsicum fruit in No. 60 powder 100 parts, exhaust it by percolation with 90 per cent. alcohol, distil off the alcohol until the residual extract weighs 50 parts. One grain of this extract is equal to 2 grains of powdered capsicum, and should yield on evaporation of the alcohol not less than half its weight of semisolid extract. The process is similar to that for liquid extract of capsicum of the U. S. P., but the product is double strength, and the extract far more suitable for the manufacture of other galenicals of capsicum. He suggests formulas for preparing "capsicum ointment," "capsicum wool," and "capsicum plaster," which see under their respective headings.—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 453.

Bitterless Cascara Sagrada Extracts—Loss of Active Matter.—Panchaud finds that the magnesia used for removing the bitter principles of cascara sagrada carries with it a portion of the active constituent—forming with the oxymethylanthraquinone a compound which is difficultly soluble in diluted alcohol. This can be demonstrated by shaking an aqueous solution of emodin with magnesium-milk. On filtering the mixture, a colorless filtrate is obtained. Approximately the same result is obtained if a diluted alkaline solution of emodin is treated in the same way.—Schweiz. Wschr. f. Chem. u. Pharm., xliii, No. 38 (1905), 518.

Extractum Chinæ Fluidum—Formula.—The pharmaceutical district societies of Saxony have adopted the following formula for the preparation of a fluidextract of cinchona, which is intended to replace a specialty exploited under the title "Extractum Chinæ Nanning:"

Cortex chinæ pulv. gross	1000.0
Are moistened with a mixture of	
Acidum hydrochloricum purum	50.0
Glycerinum	50.0
Spiritus	300.0
Aqua destillata	100.0

and percolated successively, in accordance with the Ger. Ph., IV, with

1. 1000.0 spiritus dilutus.
2. 1000.0 of a mixture of equal volumes of alcohol and distilled water.
3. 1000.0 distilled water.

The first 700.0 of the percolate are reserved, the subsequent percolate evaporated to 200.0, mixed with 100.0 of alcohol, and added to the reserved portion. The product should contain 4 per cent. alkaloid. Directions are also given for a continuous process, which may be consulted in Pharm. Ztg., li, No. 3 (1906), 30.

Fluidextract of Coca—Gravimetric Alkaloidal Determination.—Th. Röder recommends the following method for estimating the alkaloid in fluidextract of coca : Place 15 Gm. of the fluidextract into a 250-Cc. flask, add 120 Gm. of petroleum ether and 10 Cc. of ammonia water, and shake two hours. After subsidence, decant 100 Gm. of the petroleum ether solution carefully, shake it out successively with 30, 20, 10 and 10 Cc. of 0.5 per cent. hydrochloric acid, supersaturate the united acid liquids with ammonia water, add 100 Cc. of ether, and shake the mixture frequently during one or two hours. Carefully decant 80 Gm. of the ether solution, filtering if necessary through a dry folded filter, into a dry weighing flask, carefully evaporate the ether, dry for 3 hours at 100° C., and weigh. The weight so ascertained, multiplied by 10, gives the alkaloid content in 100 Gm. of the fluidextract.—Pharm. Ztg., No. 28 (1906), 322.

Fluidextract of Glycyrrhiza—Improved Process.—George M. Beringer recommends the following process for preparing a fluidextract of licorice, which has the merit of producing a product containing a minimum amount of the acrid principle, while in other respects it fully represents the drug :

Glycyrrhiza, in coarse powder, 1000 Gm. ; ammonia water, 50 Cc. ; alcohol, water, of each a sufficient quantity to make 1000 Cc. Mix the ammonia water with sufficient water to make 1000 Cc., and, having moistened the ground drug with 700 Cc. of the mixture, pack it in a cylindrical glass percolator : then add enough menstruum to saturate the drug and leave a stratum above it. When the liquid begins to drop from the percolator, close the lower orifice, and having closely covered the percolator, allow it to macerate for forty-eight hours. Then allow the percolation to proceed, gradually adding, first, the remainder of the menstruum and then water until the drug is exhausted. Reserve the first 500 Cc. of the percolate and add to this reserve 250 Cc. of alcohol, and set the mixture aside in a stoppered bottle. Evaporate the remainder of the percolate to a soft extract ; dissolve this in the reserved portion and allow the mixture to stand for two or three days. Then filter and wash the filter with a mixture of alcohol one volume, and water three volumes to make the fluidextract measure 1000 Cc.

Fluidextract of Gentian may be prepared on similar lines, using 1000 Gm.

of the drug in No. 20 powder, and sufficient alcohol and water to make 1000 Cc. Moisten the ground drug with 1000 Cc. of water heated to a temperature of 60° C., and set aside for two hours, then express with pressure. Reserve the expressed liquid measuring about 250 Cc. and add to this 250 Cc. of alcohol and set aside in a stoppered bottle. Mix the dregs from this expression with 2000 Cc. of warm water 60° C., and when cold express with pressure. Repeat twice the treatment of the dregs by macerating each time with 2000 Cc. of warm water, and express when cold. Evaporate the expressed liquids to a soft extract and dissolve this in the reserved portion and allow the mixture to stand two or three days. Then filter and wash the filter with sufficient diluted alcohol to make the fluidextract measure 1000 Cc.—Proc. N. J. Pharm. Assoc., 1905, 74–76.

Fluidextract of Hydrastis—Alkaloid Content and Relation to Extractive.—An examination of eight commercial specimens of (fluid) extract of hydrastis, by J. Koning, revealed the presence of alkaloid varying from 1.19 to about 2 per cent.—the latter being the percentage demanded by the G. P., IV. The two specimens containing the higher percentage of alkaloid yielded nearly 23 per cent. of dry extract on evaporation; but that yielding the lowest percentage of alkaloid still showed 19.5 of dry residue. The other five, though yielding alkaloid in varying quantities up to 1.70 per cent., gave residues fluctuating between 14.9 and 25.5 per cent., that giving the latter percentage being of American manufacture and containing glycerin with a total of 1.35 per cent. of alkaloid. It is evident from this investigation that no uniform relation exists between alkaloidal and extractive content in fluidextracts of hydrastis.—Pharm. Ztg., l, No. 87 (1905), 919; from Pharm Weekbl., 1905, No. 42.

Liquid Extract of Ipecacuanha, B. P.—Approximate Valuation.—H. Wippell Gadd and Sidney C. Gadd recommend the following practical method for an approximate valuation of liquid extract of ipecacuanha:

Take of

Liquid extract of ipecacuanha	5 fl. drachms.
Distilled water	5 fl. drachms.

Mix, place in a porcelain dish, and remove the alcohol by concentrating to half a fluidounce. Cool. Add fifteen minims of diluted sulphuric acid and transfer to a separator. Wash the dish with five fluidrachms of distilled water, and add the washings to the liquid in the separator. Mix half a fluidounce of ether with a like quantity of chloroform. Add about a third of this mixture to the contents of the separator. Shake. Warm by holding in the steam of boiling water. Separate and reject the ether-chloroform layer. Twice repeat this treatment with the remainder of the ether-chloroform. To the aqueous solution in the separator add an excess of ammonia, and repeat the agitation and separations with three successive portions of ether-chloroform. Collect the ether-chloroform solutions in a tared dish, and evaporate to dryness by placing the dish on the top of a water-oven. Weigh. The residue should weigh not less than six grains.—Pharm. Journ., Sept. 30, 1905, 439.

Soluble Extract of Orange Peel—Formula.—For flavoring elixirs, wines, aqueous liquids, and for the expeditious preparation of syrup of orange, Francis Hemm finds the following stock preparation very convenient, and to produce a superb aroma:

Take of:

Freshly-grated flavedo of orange	200 Gm.
Cologne spirit.	200 Cc.

Macerate four days and express. Add expressed liquid to 10 per cent. of its weight of powdered magnesium carbonate in a mortar, and rub thoroughly until a smooth, creamy mixture results, then add gradually 200 Cc. water, constantly stirring. Let stand forty-eight hours, and then filter through paper. Keep in amber bottle and cool place. To make the syrup use one part to seven parts of heavy simple syrup.—Proc. Mo. Pharm. Assoc., 1905, 79.

GELATINA.

Fluid Gelatin—Preparation.—Curt Klose prepares a sterilized solution of gelatin, which is perfectly clear and shows no tendency to gelatinization under ordinary conditions as follows: 100 parts of gelatin and 750 parts distilled water are heated in a sterilizing apparatus for six hours at a temperature of 105 to 115° C. On cooling the solution there forms a deposit of large flakes, amounting to about one-twentieth its volume; but if it is filtered at 60° C., a perfectly clear, golden-colored fluid is obtained which solidifies only when placed on ice, but liquefies again at the ordinary room temperature, and is well preserved in a cool place. In order to give the solution greater permanence, it is heated in the sterilizer for one hour on three successive days. The object of this is to permit the spores that are formed from certain bacteria to germinate during the intervals, and then to destroy the germinated spores by heat—the ungerminated spores being difficult to destroy by heat before germination. The author designates this method as "fractional sterilization." Liquid gelatin obtained in this way is free from the odor and taste of ordinary gelatin preparations.—Pharm. Ztg., l, No. 77 (1905), 813.

GLYCERITA.

Glycerite of Creosote—Formula.—Albert E. Ebert gives the following formula for a glycerite of creosote:

Creosote, beechwood	1¾	fl. oz.
Alcohol	2	fl. oz.
Glycerin.	5½	fl. oz.
Water.	6¾	fl. oz.
Magnesium carbonate.	1	av. oz.

Triturate the magnesium carbonate, alcohol and creosote together in a mortar, add the water and glycerin, put the whole in a bottle, let stand for several days and filter. The product represents about ten per cent. by weight of creosote, and may be used for making other preparations of creosote.—Meyer Bros. Drugg., July, 1905, 197.

Glycerole of Glycerophosphates—Formula.—Reginald Edgar Dyer recommends the following formula of Martindale and Westcott for preparing a very satisfactory preparation of the glycerophosphate :

Calcium glycerophosphate	160 gr.
Potassium glycerophosphate	80 gr.
Sodium glycerophosphate	80 gr.
Magnesium glycerophosphate	80 gr.
Iron glycerophosphate	40 gr.
Citric acid	30 gr.
Tincture of kola	10 dr.
Tincture of ignatia amara	1 oz.
Cudbear..	¼ oz.
Water	10 oz.
Glycerin, q. s. to make	20 oz.

Mix the cudbear with the water contained in a suitable vessel and boil for ten minutes. In the previously strained warm liquor dissolve the salts and the acid, adding the tinctures in the quantity prescribed, and finally bringing up the bulk of the solution to 20 fluidounces by the addition of glycerin.—Pract. Drugg., Dec., 1905, 266.

Glycerol Glycerophosphatis cum Medulla Rubra—Formula.—The third edition of the collection of formulas issued by the Bournemouth Pharmaceutical Association just published includes among other new formulas the following for a " glycerol of glycerophosphates with red bone marrow :"

Calcium glycerophosphate	80 gr.
Iron glycerophosphate	20 gr.
Magnesium glycerophosphate	40 gr.
Manganese glycerophosphate	20 gr.
Potassium glycerophosphate	40 gr.
Sodium glycerophosphate	40 gr.
Citric acid	15 gr.
Chloroform	5 min.
Alcohol (90 per cent.)	40 min.
Orange flower water	1 fl. dr.
Cherry laurel water	1½ fl. dr.
Glycerin extract of red bone marrow	10 oz.
Distilled water	10 fl. oz.

Dissolve the glycerophosphates and the acid in the distilled water ; then filter and add the other ingredients. Dose : 1 fluidrachm.— Pharm. Journ., Mar. 31, 1906, 385.

Glyceritum Ulmi—Formula.—Philemore E. Hommell finds a glycerite of slippery-elm bark to serve a variety of pharmacologic as well as pharmaceutic purposes, being in the latter respect particularly useful as a superior vehicle for suspending or disguising many valuable drugs. It is prepared by boiling 10 parts of elm bark in about 75 parts of water for five minutes; then macerating for two hours, straining, adding 25 parts of C. P. glycerin, and adjusting to 100 parts. The glycerite is then filtered. In order to insure perfect preservation, a half-grain of benzoic acid is added to each fluidounce.—Proc. N. J. Pharm. Assoc., 50–61.

INFUSA ET DECOCTA.

Concentrated Infusions—Revision of Current Formulas for their Preparation.—E. H. Farr and R. Wright record the results of extended experiments, undertaken with the object of revising the current formulas for concentrated infusions so that they may serve the purpose of satisfactorily preparing the official (B. P.) infusions from them. There can be little doubt that the feeling of distrust in the merits of concentrated infusions on the part of pharmacists generally is perfectly justified, for it is *prima facie* just as difficult to reproduce with any degree of precision in a diluted product the distinctive characters of a fresh infusion as it is in many cases to make the latter fully representative of the original drug. In the preparation of concentrated infusions the authors have recognized the principle that only the water-soluble constituents should be extracted, and that the employment of alcohol should as far as possible be restricted to its use as a preservative. To this rule there are sundry exceptions, and, in the case of oranges, cloves, and others, it is absolutely necessary to employ a dilute alcoholic menstruum, or to fortify the preparation with the tincture in order to render it sufficiently aromatic for the purpose for which it is required. It goes without saying that distilled water should in all cases be used in making these preparations. With regard to processes, the authors describe two, the one a macero-expression process, the other a process of re-percolation. The macero-expression process, involving as it does three distinct processes of maceration and expression, with subsequent evaporation, is not nearly so convenient for use, neither does it, as a rule, give so thorough an exhaustion of the drug as the process of re-percolation, and such being the case they have, wherever possible, given the preference to the latter. The main objects kept in view have been (1) aqueous extraction; and (2) as complete an exhaustion of the drug as possible, sufficient alcohol only being used to prevent the possibility of fermentative changes in the finished product. The following are the observations and recommendations concerning the individual infusions which correspond in strength to the Liquores Concentrati of the B. P.:

Chamomile.—The whole flowers cannot be exhausted. Process recommended, re-percolation with diluted alcohol, 1 drop of oil of chamomile being previously mixed with each ounce of the powdered flowers. The process recommended yields a product equal in aroma and bitterness to a fresh infusion.

Orange.—Process recommended, re-percolation with dilute chloroform water. An ounce of B. P. tincture per pint is added to fortify. The product keeps well, and gives on dilution a preparation similar to the fresh infusion.

Orange (*Compound*).—Process recommended, macero-expression with dilute chloroform water. The product is fortified by the addition of a fluidounce each of the tinctures of lemon and orange. The preparation keeps well, the product of dilution is darker and somewhat more bitter than the official infusion, but scarcely as pungent and aromatic.

Buchu.—Process recommended, macero-expression with dilute alcohol. The preparation is fortified by the addition of a fluidounce of tincture of buchu per pint. It keeps well, but the product of dilution is not equal to a fresh infusion.

Calumba. — Process recommended, macero-expression with dilute chloroform water. The reserved liquid to be heated to 85° C., and kept at that temperature for five minutes. The product is satisfactory in every respect.

Cloves.—Process recommended, maceration in diluted alcohol followed by percolation. The product is not satisfactory, being deficient both in pungency and aroma.

Cascarilla. — Process recommended, macero-expression with dilute chloroform water, the preparation being fortified by the addition of 6 fluidrachms tincture of cascarilla per pint. The product of dilution is equal to the official infusion.

Chiretta.—Process recommended, re-percolation with dilute chloroform water. The preparation keeps well, and the product is quite satisfactory.

Cusparia. — Process recommended, macero-expression with dilute chloroform water. This preparation is a good one, and yields an excellent product on dilution.

Digitalis. — Process recommended, macero-expression with dilute chloroform water. The process is similar to that of the B. P. C. Formulary, and the product is satisfactory.

Gentian (*Compound*).—Process recommended, re-percolation with dilute chloroform water. The preparation is fortified by the addition of 2 fluidounces tincture of lemon and a fluidounce tincture of orange per pint. The result is a satisfactory product.

Krameria—Process recommended, re-percolation with dilute chloroform water. Exhaustion is not so complete as when diluted alcohol is used as a menstruum, but the product of dilution more closely resembles the official infusion.

Hops.—Process recommended, macero-expression with diluted alcohol. Aqueous extraction is not a success ; on adding alcohol copious precipitation takes place. The preparation made from old hops seems much better than from the new. The product is clearer, the extractive higher and the preparation has marked odor of isovaleric acid. In view of the marked difference, the employment of old hops should be officially directed.

Quassia.—Process recommended, re-percolation with dilute chloroform water. This preparation is opalescent when freshly made, but becomes clear on keeping.

Rhubarb.—Process recommended, re-percolation with dilute chloroform water. The percolation is slow, but the product excellent.

Roses (*Acid*).—Process recommended, percolation with acidified diluted alcohol. The product of dilution of the concentrated preparation is not like the fresh infusion, though its tinctorial power is at least as high. Both deposit considerably when kept.

Broom.—Process recommended, re-percolation with dilute chloroform water. This preparation deposits considerably when kept, and the result is somewhat unsatisfactory.

Senna.—Process recommended, macero-expression with diluted alcohol. The preparation is fortified by the addition of half an ounce essence of ginger per pint. The aroma and flavor are excellent, and the product of dilution fully equal to the fresh infusion.

Senega.—Process recommended, re-percolation with diluted alcohol, to which a little liquid ammonia has been added. A small quantity of oil of of wintergreen is dissolved in the finished product. The result is satisfactory, although there is a considerable deposit on keeping.

Serpentary.—Process recommended, re-percolation with dilute chloroform water. The preparation is quite satisfactory and fully represents the drug.

Barberry.—Process recommended, re-percolation with dilute chloroform water. The preparation is satisfactory, keeps well and yields a good product on dilution.

Valerian.—Process recommended, re-percolation with dilute chloroform water, to which a little ammonia has been added. The preparation is an excellent one, the product of dilution being superior, if anything, to the fresh infusion.

Summing up the impressions made by the experiments recorded, which are amplified by tabulated statements of extract percentages in infusions and concentrated liquors of the B. P., recorded at different times by other authors, and now by themselves, the authors express the opinion that, with few exceptions, the infusion made from the concentrated infusion may claim to be considered quite as fully representative of the drug from which it has been prepared as the official infusion. The exceptions are broom, cloves, compound orange, buchu and roses, which are more or less to be regarded as failures, while, on the other hand, in several cases, notably senna and valerian, the infusions prepared from the concentrated preparation are superior to those officially prepared.—Pharm. Journ., Feb. 17, 1906, 163–166.

Concentrated Infusions—Commercial Variation.—R. A. Cripps has determined the solids in a number of concentrated infusions of commerce with the following results: Conc. infus. calumba gave from 1.8 to 3.3 per cent. of extractive, the higher figure being the normal requirement. Concentrated cascarilla should contain about 0.7 per cent. of bitter principle; one commerial sample contained more, but five out of eight contained less than 0.1 per cent. The extractive of inf. gent. co. should be 9.2 per cent., but half of the commercial specimens contained only about a third of that amount. Cinchona infusion varied in alkaloids from 0.23 to 0.81 per cent., and quassia yielded 0.04 to 0.74 per cent. of extractive, the normal being 0.22 per cent. These results demonstrate that the concentrated infusions of the market leave much to be desired.—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 441–444.

Infusum Sennæ Comp.—Cold Process of Preparation.—According to the new Austrian Pharmacopœia (VIII), compound infusion of senna is made without applying heat for the extraction of the senna, as follows: Macerate 12 p. of senna leaves in 100 p. of water for twelve hours, strain, heat the infusion to boiling with 15 p. of manna and 1 p. of magnesium carbonate, and filter while hot. A handsome and stable product is thus obtained in which the acids present in the infusion are neutralized by the magnesia. On evaporating a portion it should yield 15 per cent. of dry residue.—Pharm. Ztg., li, No. 28, (1906), 321.

Concentrated Compound Decoction of Aloes—Unsatisfactory Character.—R. A. Cripps records the results of examination of eight samples of 1 : 2 and 1 : 3 concentrated compound decoction of aloes, which show that all the preparations are seriously deficient in alcohol. He also submits data in respect to alkalinity and extraction which demonstrate that a concentrated form of the compound decoction of aloes on B. P. 1898 lines is impossible. Moreover, he considers such a preparation unnecessary; the B. P. article is easily made and keeps well.—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 447–450.

Compound Decoction of Aloes, B. P.—Improved Method of Preparation.—F. H. Alcock considers the official (B. P.) formula for compound decoction very faulty, and brings forward experimental data which lead him to attribute the formation of a precipitate largely to the presence of cochineal in the compound tincture of cardamom directed for its preparation. The formula should be overhauled and, if need be, altered by the omission of the cochineal, which appears to be a superfluity. He suggests that a more satisfactory preparation is obtained by using simple tinctures of the drugs in the proper quantities in place of the drugs themselves.—Pharm. Journ., Mar. 10, 1906, 282.

LINIMENTA.

Liniment of Camphor, U. S. P.—Faulty Manipulation.—Paul Caldwell says that the U. S. P. direction for heating "is apt to allow the fire to go as far as it likes—also the camphor," and he advises therefore that the directions should be modified so as to provide for the preliminary heating of the oil to about 190° F.; this is then to be poured on the camphor in a vessel capable of being well closed and shaken until solution is effected.—Drugg. Circ., July, 1905, 220.

Camphor Liniment—Assay by Evaporation.—E. Fullerton Cook finds that an accurate assay of camphor liniment is possible by evaporation, provided the heating be continued long enough. Experiment has shown that when heated at 100° C. for half an hour, only about one-third of the camphor was volatilized, while when continued for 2½ hours more, all but about one-half per cent. of the camphor had been driven off. The process in detail would be as follows: Pour about 5 Cc. of the liniment into a tared platinum or porcelain dish, determine its weight exactly, then subject it to the heat of a water-bath, (about 100° C.) during three hours. Cool and weigh. To find the percentage of camphor indicated by the assay, subtract this weight from the amount of camphor liniment originally taken, multiply the difference by 100 and divide the product by the weight of the sample taken. To this percentage apparently about one-half per cent. may be added, as a correction factor, to represent the total percentage of camphor in the sample.

The author has also made quite an extensive series of experiments with the object of ascertaining the possible value of a method based upon the optical rotation. He gives data which point out the availability of a polariscopic method; but the method becomes complicated by the fact that camphor dissolved in oil shows a different specific rotation (+ 50.63°) from that exhibited by its solution in alcohol (+ 43.52°), and that a correction must therefore be made. Concerning the method of

Preparation of Camphor Liniment, the author's experiments point out that there is an unavoidable loss if the official (U. S. P.) directions to dissolve the camphor by heating in a flask *loosely stoppered,* be followed, and advises that the directions be modified so that either no heat at all is used or that the oil be heated, the camphor added, and after securely stoppering the flask, the moisture shaken until the camphor is dissolved.—Proc. N. J. Pharm. Assoc., 1905, 76–80.

Linimentum Camphoræ, B. P.—Method of Assay.—W. B. Cowie and

William Dickson having ascertained that a solution of 20 Gm. of camphor in 80 Cc. of olive oil measured 100 Cc., and that therefore the volume and weight of camphor in 100 Cc. of the finished camphor liniment are identical, propose the following modification of the method of assaying: (*a*) The specific gravity of the liniment is taken at 15.5° C. (*b*) The weight of liniment equal to 10 Cc. is placed in a weighed beaker, 6.5 Cm. deep by 3.5 Cm. in diameter. (*c*) Into a similar beaker an amount of olive oil of ascertained specific gravity, equal to 8 Cc., is weighed. This represents the amount of olive oil in 10 Cc. of a properly prepared liniment. (*d*) The beakers are placed in a sand bath and heated at 150° C. to constant weight—the time required being from 30 to 40 minutes. The loss in weight having been ascertained, that found in the olive oil (*c*) is deducted from the loss in the liniment (*b*), thereby allowing for any change which may take place in the oil during the operation, in enabling a correct determination of the percentages of camphor in the liniment. In practice, the authors, who give analytical data, found the loss in the oil to average 0.162 per cent.—Pharm. Journ., Mar. 10, 1906, 281.

In view of the wide diversity of opinion regarding the proper temperature to employ for the determination of camphor in camphor liniment, the time required for complete volatilization, and the correction to be made on account of changes in the olive oil, John Lothian again calls attention to the method of assay advocated by him, which consists in simply heating the camphorated oil in a shallow, flat-bottomed dish on a water-bath for an hour. Instead of a shallow, porcelain basin, however, it is better to use a cylindrical glass dish, 1 Cm. in height and 8 Cm. inside diameter. The cover of a culture dish answers well. The superficies of such a dish is 50 square Cm., and when 5 Cc. of oil is placed in it there is a layer of oil 1 Mm. deep. It is better to use half that quantity. The dish is supported on a copper ring of the same inside diameter placed on the water-bath and levelled, so as to obtain a uniform layer. The bath should be nearly filled with water, which is kept boiling briskly, no further attention being required until an hour has elapsed, when the dish is taken off, quickly cooled, weighed, and the loss determined. The results obtained by using a deep cylindrical dish of the same diameter dipping in the water were not so good. This is due to the difficulty of maintaining a layer of oil of uniform depth. The behavior of the olive oil, however, must be taken into account, and in practice it is not found advantageous to continue the heating beyond one hour, as after the camphor is expelled the oil begins to take on a bleached appearance and to gain weight; as much as 2 Cgm. may be gained on heating for another hour. The olive oil itself, heated under the same conditions, did not gain in weight. It is evident that the oil is affected in some way by the camphor, and the author, therefore, places no reliance on correction figures obtained by heating plain olive oil under the same conditions as camphorated oil.—Pharm. Journ., April 28, 1906, 493.

Linimentum Potassii Iodidi cum Sapone, B. P.—Improved Formula.—Discussing the trouble experienced in the preparation of the official (B. P.) liniment of potassium iodide with soap, James Haddock recommends the following formula: Coconut oil, 16 parts; caustic potash, 5 parts; water, 20 parts; glycerin, 16 parts; potassium iodide, 4 parts; water (second portion), 4 parts. In a tared dish, large enough to allow for frothing, dissolve the caustic potash in the first portion of water, on a sand-bath. Into this solution strain the coconut oil, previously melted, apply heat until saponification is completed, add the glycerin, and evaporate until almost reduced to the required weight. Dissolve the iodide in the remainder of the water, add to the contents of the dish, and continue evaporation to the required weight. Strain into a container and allow to cool. The process occupies no longer time than the official method, and may be carried out, without inconvenience, at the dispensing-counter if necessary.—Chem. & Drug., Jan. 6, 1906, 26.

Saponated Iodoform Liniment—A Preparation Suitable for Inunctions.—The non-absorbability of iodoform by the skin has heretofore prevented its extended use for topical application. A. Bianchi finds, however, that in the following combination the iodoform is readily absorbed by the skin: 35 parts of powdered potassium hydroxide are dissolved in 25 parts of water in a flask, provided with a tale stopper, 50 parts of pure oleinic acid are added, and the mixture is vigorously shaken; then 30 parts of alcohol are added, followed by 30 parts of sublimed iodine, in portions at a time, with continued but gentle agitation. If the mixture becomes colorless, more iodine is added in small portion until a slight excess is evidenced by permanent color; whereupon the slight excess is removed by the addition of alkali. After standing several days, the clear solution is decanted into small bottles of dark glass. The product is a yellow, syrupy fluid, having the odor of iodoform, permanent in the light (? Rep.) and air, and is readily miscible with water, alcohol, ether, chloroform, carbon disulphide, benzin, volatile and fixed oils, etc. When applied to the unbroken skin it is readily absorbed—Pharm. Ztg., l, No. 95, (1905), 1002; from Boll. Chim. Farm., 1905, No. 20.

Linimentum Terebinthinatum—Improved Formula.—G. Stein observes that turpentine liniment, which formerly was dispensed in the form of a thick liquid resembling ammonia liniment, has in recent years, with the addition of alcohol to the soft soap, been supplied in the form of a clear liquid. Its successful preparation in an acceptable condition depends largely on the purity of the soft soap employed, but becomes uniformly possible if the following formula and manipulation be observed: 40 parts of fused potassium hydroxide, 20 parts of water, 100 parts of alcohol, 210 parts of linseed oil, and 200 parts of oil of turpentine are gently heated together, until a clear solution is effected; the liquid is then gradually mixed with 100 parts of water, shaking after each addition, and then heated until complete saponification is effected. The soap solution so obtained is then gradually diluted with 330 parts of oil of turpentine.—Pharm. Ztg., li, No. 2 (1906), 18.

LIQUORES.

Percentage Solutions—Calculated Quantities.—Roy M. Riley has calculated the quantities of medicament required to make 1 pint, wine measure (U. S. P., 1880, et ante), of percentage solutions of different strengths, which may be conveniently consulted in the following table:

Percentage solution.	Quantity for 1 pint.	Percentage solution.	Quantity for 1 pint.
$\frac{1}{50}$ per cent..........	$1\frac{1}{2}$ grains.	1 per cent........	$72\frac{1}{2}$ grains.
$\frac{1}{20}$ per cent..........	$3\frac{5}{8}$ grains.	2 per cent........	145 grains.
$\frac{1}{10}$ per cent..........	$7\frac{1}{4}$ grains.	4 per cent........	290 grains.
$\frac{1}{4}$ per cent..........	$18\frac{1}{8}$ grains.	5 per cent........	$362\frac{1}{2}$ grains.
$\frac{1}{2}$ per cent..........	$36\frac{1}{4}$ grains.	10 per cent........	725 grains.

—Proceed. Kans. Pharm. Assoc., 1905, 63.

Liquor Cresolis Compositus, U. S. P.—Modification of Formula.—Complaints both as to quality of the cresol on the market and the practicability of the official process for preparing the compound solution induced Charles H. LaWall and E. Fullerton Cook to inquire into the facts of the case. Regarding the commercial quality of cresol, experiments made with six samples, three of them of American, English and German origin respectively show them all to respond fairly well to the official requirement as regards boiling-point, but they show some variations in the specific gravity and also in their solubility in water. In fact, none of them form absolutely clear solutions, a flocculent material depositing in all even with excessive quantities of water. On the other hand, they were all free from hydrocarbons, and form clear solutions with sodium hydroxide solutions. The variations observed appear therefore to be due to the varying proportions of the three isomers which go to make up the official substance.

Concerning the formula the authors find that a slight modification will answer perfectly for producing a preparation which is transparent as soon as completed, and which mixes clear with all proportions of water without any delay whatever. It consists in first preparing a soft soap, using the same amounts of linseed oil and potassium hydroxide as directed for the preparation of the official compound solution of cresol, but following the details of the process officially directed for soft soap. The latter (from

350 Gm. of linseed oil) being finished, it is dissolved in 500 Gm. of cresol, and a sufficient quantity of water is added to make the solution weigh 1000 Gm. The authors furthermore find that equally good results are obtained, if only two-thirds the amount of soap is used.—Amer. Journ. Pharm., April, 1906, 169–172.

Liquor Cresolis Compositus, U. S. P., VIII.—Improvement of Formula.—Paul Caldwell observes that the cresol should be added after the soap has been formed, thus securing at once a clear compound solution of cresol, but even then the product is not miscible with water to form a clear solution unless at least 5 per cent. of glycerin be added. This will allow dilution to any extent.—Drugg. Circ., 1906, 159.

Liquor Formaldehydi Saponatus — Formula of the Saxon Pharmaceutical District Societies.—Liquor kali caustici, 26.0; spiritus (0.830), 10.0; oleinum redistillatum, 20.0; formaldehydum sol. (G. P. iv), 44.0; oleum lavandulæ, gtts. iii. M.—Pharm. Ztg., li, No. 3 (1906), 30.

Solution of Glycerophosphates—Formula.—Reginald Edgar Dyer recommends the following formula for preparing a solution of glycerophosphates:

Calcium glycerophosphate	1½ dr.
Sodium glycerophosphate	½ dr.
Potassium glycerophosphate	½ dr.
Magnesium glycerophosphate	½ dr.
Iron glycerophosphate	½ dr.
Ignatia tincture	½ dr.
Pepsin	45 gr.
Diastase	45 gr.
Orange tincture	3 dr.
Cherry syrup	6 oz.

Mix and filter.

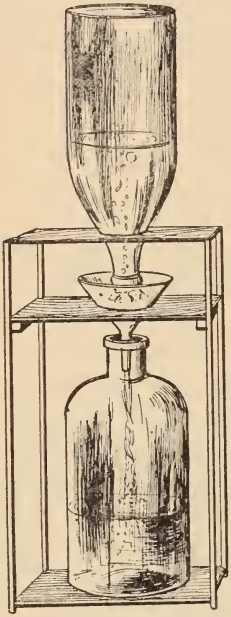
—Pract. Drugg., Dec., 1905, 265.

Sweet Solution of Hypophosphites Compound—Formula.—Adolph T. Marquier recommends a formula for making a compound solution of hypophosphites, which differs from the compound solution of hypophosphites of the N. F. essentially in the following particulars: the substitution of 8.5 Cc. of compound spirit of orange, U. S. P., for 35 Cc. of orange flower water, the addition of 8.0 Cc. of solution of saccharin N. F.—and of 90 Cc. of alcohol, and the use of quinine hypophosphite in place of the alkaloid. The product is claimed to be very stable under ordinary conditions, and to be very palatable.—Proc. N. J. Pharm. Assoc., 1905, 80–82.

Lime Water—Efficient Container.—B. E. Pritchard, in a paper on "Caring for and Dispensing Lime Water," describes a container which has proven very efficient for keeping lime water in good condition. Selecting a large (5 gal.) bottle, a hole was drilled into the side, close to the bottom; the mouth of the bottle was fitted with a sound cork, bearing a glass tube extending, after insertion, several inches below the shoulder of the bottle, and this tube was fitted with a neat brass cock extending from the outer-side of the cork. The orifice near the bottom of the bottle being closed with a good cork, lime water was made by the usual U. S. P. process, introduced into the bottle, and the cork being inserted into the neck, the bottle is inverted and placed into a position prepared for its reception by boring a hole of suitable size in a stout shelf. The undissolved lime settles in the neck and shoulder of the bottle, and the glass tube then extends into the clear liquid, which may then be withdrawn without disturbing the undissolved lime, as required, the cork closing the air-hole having previously been removed.—Proc. Pa. Pharm. Assoc., 1905, 179–181.

A similar expedient to the preceding, suitable for a large business, is suggested by Paul Caldwell, who uses a barrel for the purpose. After slaking and washing the lime, it is put in the barrel, which is then filled with water, and after thorough shaking to insure saturation is allowed to clarify by subsidence. A wooden spigot inserted into the barrel just above the point to which the lime settles will allow the lime water to be drawn off as required; or this may be done by means of a glass siphon provided with a rubber-tube extension and closed by a clamp.—Drugg. Circ., July, 1905, 220.

FIG. 43.



Solution of Magnesium Citrate.—Method of Preparation.—Frank W. A. Hain recommends the following formula and method for preparing solution of magnesium citrate:

Magnesium carbonate	10 ounces.
Citric acid	20 ounces.
Sugar	21 ounces.
Oil of lemon	½ drachm.
Water, enough to make	240 ounces.

Introduce the magnesium carbonate into a wide-mouthed 2-gallon bottle, drop the oil of lemon onto it, stir with a wooden stick, and then add the citric acid, the sugar, and water enough to come up to a mark on the bottle, indicating the presence of 240 ounces. For this purpose use cold water, adding about half of the quantity first, and the remainder when the substances are mostly dissolved. By allowing the solution to stand for a half to a whole day, it will then filter better and more quickly than when hot water is used. The filtration is most conveniently effected by the use of the automatic apparatus shown by Fig. 43, which is easily constructed. The bottle containing the solution is simply inverted so as to reach within the filter, the solution being supplied only as fast as it passes through the filter. When finished, it may be kept without danger of spoiling in the ice-box, and filled into bottles of the usual size (12 oz.), a tablet of potassium bicarbonate (40 grains), obtainable on the market, being dropped into it just before corking and delivery. —Boll. Pharm., Nov., 1905, 472.

Liquor Potassii Arsenitis—Improvement of Formula.—Pascal recommends the substitution of the prescribed spirit of lavender by the same quantity of distilled melissa water. This is to be added to the solution of potassium arsenite while boiling hot, and the solution is to be filtered after cooling. Prepared in this way a permanently clear solution is obtained. —Pharm. Ztg., l, No. 96 (1905), 1009; from Bull. Commerc., 1905, No. 10.

Liquor Kali Arsenicosi—G. P. Modified Manipulation.—G. Hamel finds it advantageous to manipulate as follows when making Fowler's solution by the G. P. process: To make 300 Gm., 3 Gm. each of arsenous acid and potassium carbonate are moistened with 20 drops of water in a test-tube, the mixture is carefully heated until melted, which requires only a few seconds, and then 2 or 3 Cc. of water are added. After heating a few minutes to boiling, the other ingredients prescribed are added in the usual way.—Pharm. Ztg., li, No. 36 (402).

Caffeine-Camphor Solution—Preparation for Hypodermic Use.—A. Claret recommends the following formula for preparing a solution suitable for the subcutaneous injection of caffeine and camphor: Add to 3 Cc. of sterilized glycerin a solution of caffeine, 0.25 Gm., and sodium salicylate, 0.25 Gm., in sufficient water to make 1 Cc.; mix, and add 1 Gm. of spirit of camphor. About 5 Cc. of solution is thus obtained, containing the usual single dose of 0.25 Gm. of caffeine and 0.1 Gm. of camphor.—Pharm. Ztg., li, No. 3 (1906), 30; from Bull. Comm., 1905, No. 11.

MELLITA.

Oxymel Scillæ, B. P.—Improved Formula and Directions.—A. C. Abraham, after a detailed and unfavorable criticism of the formula and process for preparing oxymel of squill B. P., concludes as follows:

First, that the Pharmacopœia is not justified in vitally altering the composition of a remedy which has for hundreds of years been of practically the same composition, without altering its name.

Secondly, that if the Pharmacopœia is right in altering the composition, the commercial article, certainly to a large extent, is not made in conformity with it.

Thirdly, that the Pharmacopœia process requires radically altering, in the following ways: The squill should be put through a 20-sieve, which will ensure its being practically dry. The honey should be of a fixed weight, and the vinegar of squill should be evaporated on a water-bath, say, to half, before mixing with the honey.—Pharm. Journ., Dec. 23, 1905, 865.

Oxymel of Squill, B. P.—Suggested Modification.—In view of the indefiniteness of the amount of honey required to make the oxymel of squill according to the official formula, J. W. Clegg suggests for the purpose of criticism the following substitute for the official (B. P.) formula: Squill, in coarse powder, 2½ oz.; strong acetic acid, 2½ fl. oz.; distilled water, 8 fl. oz.; clarified honey, a sufficient quantity. Digest the squill for seven days in a mixture of the acid and water. Press strongly and filter. Mix the product with two and a half times its volume of clarified honey. Heat to boiling-point and filter if necessary.—Pharm. Journ., Feb. 3, 1906, 107.

MISTURÆ.

Mistura Expectorans, Stokes, N. F.—Improved Formula and Manipulation.—Paul Caldwell observes that Stokes' Expectorant Mixture seems to be gaining in popularity, but it is an unsightly mixture, which may be rendered acceptable among modern pharmaceuticals by the following modification of the formula and process: Make a solution of the ammonium carbonate in water and add the fluidextracts. To this solution add 5 per cent. of the finished product, of alcohol, and of a like amount of glycerin. Next add the camphorated tincture of opium, and filter the whole through magnesium carbonate, returning the filtrate to the filter until it passes entirely miscible with water; then add the syrup.—Drugg. Circ., May, 1906, 159.

Mistura Ferri Composita, B. P.—Improved Process of Preparation.—W. A. Knight points out some of the difficulties encountered in the preparation of Griffiths' Mixture according to the official (B. P.) directions, and describes a method for overcoming these while adhering to the letter of the formula. There seems to him, however, no reason why the equivalent quantity of tincture should not be used for the myrrh directed in substance, thus avoiding the tedious work of emulsifying that drug by trituration, and he suggests the following formula as giving a uniform product, easily and quickly made:

Ferri sulphas	gr. xxv.
Potassii carbonas	gr. xxx.
Oleum myristicæ	♏v.
Tr. myrrhæ	ʒvss.
Syrup	♏lxxx.
Mucilago acaciæ	ʒj.
Aq. rosæ ad	℥x.

Dissolve the carbonate in 2 oz. rose water in a 10-oz. bottle, add the mucilage, and shake to cover the inside of the bottle entirely; then add the mixed oil and tincture in small portions, shaking very gently after each addition (violent shaking tends to throw out the resin in aggregated nodules); add rose water up to 7 oz., and with this mix the solution of iron sulphate and the syrup.—Chem. & Drug., Jan. 6, 1906, 26.

Mistura Sulphurica Acida—Properties and Valuation.—H. Kühl and R. Hahn find the "Mixtura Sulphurica Acida" of the G. P., when prepared in conformity with the official requirement, to contain on an average about 12.5 Gm. each of ethylsulphuric acid and of uncombined sulphuric acid in 100 Cc. The authors have, however, found samples of this preparation containing only about 10.5 per cent. of ethylsulphuric acid, with 15 per cent. of free sulphuric acid, and therefore point out a method for the valuation of the preparation, because it is generally assumed that ethylsulphuric acid is more acceptable to the stomach than is free sulphuric acid. The direct determination of ethylsulphuric acid may be made by neutralizing the preparation with solution of potassium hydroxide, evaporating the solution on the water-bath, and exhausting the residual saline mixture with warm absolute alcohol, which dissolves the potassium ethylsulphate and leaves the sulphate undissolved. The calculation may then be readily made from the weight of ethylsulphate obtained on evaporating the alcoholic solution.—Apoth. Ztg., xx, No. 84–85 (1905), 855 and 867.

Whooping Cough Mixture—Formula.—The following formula is recommended for a whooping-cough mixture by Josias: Sodium benzoate, 1 to 3 Gm.; orange flower water, 10 Gm.; linden flower water, 70 Gm.; syrup of ipecac, 30 Gm. M. Dose: a teaspoonful every hour.—Pharm. Ztg., li, No. 3, (1906), 30; from Nouv. Rem.

Liquid Sabadilla—A "Vermin Killer."—Albert E. Ebert gives the following formula for a "vermin killer" prepared from sabadilla:

Sabadilla, powder	2 av. oz.
Acetic acid	½ fl. oz.
Wood alcohol	2 fl. oz.
Water sufficient to make	16 fl. oz.

Mix the acetic acid with fourteen fluidounces of water and boil the sabadilla in this mixture for five to ten minutes and when nearly cold add the alcohol, let stand and decant the clear solution and bottle.

Directions: Shake the bottle and apply to the affected parts night and morning.—Meyer Bros. Drugg., Dec. 1905, 367.

MUCILAGINES.

Mucilages of Tragacanth and Acacia—Reduction of Viscosity on Admixture.—Edmund White calls attention to an observation recently made, that when mucilage of tragacanth is mixed with mucilage of acacia, the resulting mixture of the two mucilages was thinner than the corresponding mucilage of tragacanth mixed with the same quantity of water. This loss in viscosity is remarkable, and the cause of the reaction as yet unexplained. —Trans. Brit. Pharm. Conf., (Yearbook of Pharmacy), 1905, 485.

OLEA.

Oily Solutions of Alkaloids—Preparation for Ophthalmic Use.—Following up the favorable observations concerning the use of oily solutions of alkaloids for ophthalmic purposes, recorded by Panas in 1898, Scrini has obtained results which confirm the advantages of such solutions in the treatment of the eyes. These consist in greater celerity, intensity and continuance of action, on the one hand, and the greater stability of oily than of aqueous solutions of alkaloids, as well as unlimited retention of sterility after sterilization, on the other. The oil used for preparing solutions (which may be either arachis—or olive oil) is first deprived of free fatty acids by shaking it occasionally during several days with one-half its volume of 95 per cent. alcohol, the alcohol is separated by decantation, and the oil, if necessary, filtered through paper. It is then heated for 10 minutes at 120° C., and set aside for use in a container closed with a tuft of cotton. The author has found the following percentages of alkaloid to be the most useful for practical purposes:

	Per cent.		Per cent.
Atropine	0.2–0.5	Cocaine	2.0
Duboisine.	0.2.–05	Eserine	0.5–1.0
Eucaine B	3.0	Holocaine.	1.0
Homatropine.	0.2–0.5	Pilocarpine.	2.0
Scopolamine hydrobromide	0.1–0.2	Storaine	2.0

With the exception of scopolamine hydrobromide, the free bases are to be understood for preparing the solutions. With the exception of eserine, these solutions are sterilized in the usual manner. In the case of eserine, this is dissolved in a little ether, the solution added to the oil, and the ether is then completely evaporated on a water-bath at not exceeding 45° C.—Pharm. Ztg., li, No. 26 (1906), 300; from Bull. Commerc., 1906, No. 11.

Oleum Hyoscyami—Improved Process.—A. Rathje describes the following process for preparing oil of hyoscyamus, which depends on the conversion of the alkaloids into stearates before subjecting the drug to the solvent action of the oil, and yields a product superior to that obtainable by the official (G. P., IV) process: 25 p. of the finely-cut leaves are heated with a solution of 1 p. of stearic acid in 100 p. of alcohol on a water-bath, under a reflux condenser, for two hours; 250 p. of olive oil are then added and the mixture is heated on the water-bath until the alcohol is completely dissipated, and treated further in the usual manner. In this way an oil containing 0.0075 per cent. of alkaloids was obtained, whereas the officially-prepared oil from the same leaves contained only 0.0048 per cent. The

Determination of Alkaloids in Oleum Hyoscyami is best accomplished as follows: A mixture of 50 Gm. of the oil and about the same quantity of ether is shaken out successively with three portions of 100 Cc. each of 1 per cent. hydrochloric acid; the united acid aqueous liquids are rendered alkaline with solution of sodium hydroxide and shaken out with several portions of ether; the united ether solutions are washed once with distilled water, filtered through a small filter, and shaken out with 20 Cc. of $\frac{N}{100}$ hydrochloric acid, the excess of the latter being determined by titration with $\frac{N}{100}$ potassium hydrate, using iodeosine as indicator.—Pharm. Ztg., l, No. 79 (1905), 834; from Jour. d. Pharm. v. Els.-Lothr., 1905, No. 9.

Oleum Hyoscyami—Improved Method of Preparation.—The following improved method for the preparation of oil of hyoscyamus is recommended by Ottakar Kreytschy: 5 Kgm. of finely cut hyoscyamus leaves are digested at 20° to 25° C. during three days with 5 Kgm. of 96 per cent. alcohol, expressed, and the expressed tincture is added to 5 Kgm. of olive oil in portions of 1 liter at a time, distilling off the alcohol after each addition. The expressed leaves are digested in the recovered alcohol as before, again expressed, and the expressed liquid distilled with 5 Kgm. more of oil. The two oils so obtained are mixed, allowed to stand one week and filtered. A fine green oil is so obtained, having a strong odor of the leaves. The loss of alcohol is reduced to a minimum. —Pharm. Ztg., li, No. 2 (1906), 17.

Phosphorated Oil—Comparative Stability.—In a careful study of the conditions of preparing, preserving, and assaying phosphorated oil, H. Enell has determined that the deterioration of this preparation is due in some degree to the greater or less acidity of the oil used for its preparation, the phosphorus being converted into phosphorous acid. He has, furthermore, determined that when properly prepared and protected, phosphorated oil is fairly stable, retaining its full percentage of phosphorus, and that this percentage is not reduced to more than 0.95–0.96 per cent., even after keeping it for 5 or 6 months. The author suggests a method for the assay of the oil, based upon the results of his observations, for which he claims exactness and reliability.—Pharm. Ztg., L, No. 57 (1905), 601–603.

Referring to Mr. Enell's paper, E. Rupp observes that the theoretical changes involved in the oxidation of the phosphorus by reason of acidity of the oil used must also include the formation of hypophosphorous acid, and that this must be taken into consideration in the assay method alluded to in the above paper. The two papers should, therefore, be consulted together.—Ibid., No. 59 (1905), 621, 622.

OLEORESINÆ.

Oleoresin of Male Fern—Simple Method of Assay.—G. Fromme (Cæsar Loretz's Report) recommends the following process for determining the crude filicin in oleoresin of male fern: 5 Gm. of the oleoresin are dissolved in 30 Gm. of ether, 100 Gm. of 3 per cent. (saturated) aqueous solution of barium hydroxide added, the mixture vigorously shaken during several minutes, and transferred to a separatory funnel. When the aqueous layer has separated clear, 86 Gm. (= 4 Gm. oleoresin) are run into a vial, 2 Gm. of 25 per cent. hydrochloric acid are added, and the mixture is shaken out with three portions of 25–15–10 Cc. of ether, each portion being successively filtered through the same plain, double filter into a tared Erlenmeyer flask. The ether is distilled off, the residue dried at 100° C. to constant weight, allowed to remain in the exciccator for half an hour, and weighed. The weight, multiplied by 25, gives the percentage of crude filicin in the sample. The baryta water for the above purpose is prepared by triturating an excess of barium hydroxide with distilled water, and decanting or filtering the solution.—Pharm. Ztg., l, 73 (1905), 771.

PILULÆ.

Blue Mass—Expedient to Maintain Proper Consistence.—H. F. Ruhl, in response to a query, states that he has found the U. S. P. formula to prove satisfactory for preparing blue mass, and that, when the mass shows a tendency to become dry, a common school sponge slightly moistened with water and placed within the jar 6 or 8 hours, will overcome the tendency and maintain it in proper consistence.—Proc. Pa. Pharm. Assoc., 1905, 138.

Phosphorus Pills—Convenient Mass for their Preparation.—Thos. S. Wiegand suggests a phosphorus mass which will be found convenient for accurately weighing out and incorporating phosphorus in pills. A convenient quantity of phosphorus is weighed into a test-tube and sufficient pure carbon disulphide is added to dissolve it; then butter of cacao is added in small quantities at a time until fifteen times the weight of phosphorus used has been added; after corking the test-tube it is placed in warm water and shaken until the contents are thoroughly mixed. If then the carbon disulphide is allowed to evaporate completely, a perfect mixture of cacao fat and finely divided phosphorus is obtained, containing the latter in the proportion of 1 : 16, which admits of being accurately and conveniently weighed, and of being incorporated with pill masses in the usual manner. It is advisable, however, to add a few drops of chloroform while manipulating such masses, so as to produce an atmosphere of chloroform in the mortar and prevent any likelihood of oxidation.—Amer. Journ. Pharm., July, 1905, 327.

Quinine Pills—A Tasteless Mass.—Yvon prepares a tasteless quinine mass by triturating the quinine (salt? Rep.) with a little sodium bicarbonate and forming the mass with a solution of oil of sweet almonds in ether, flavored with a little lemon or peppermint oil. The addition of soda, it is claimed, overcomes the natural acidity of the mucous secretion of the tongue, and thus prevents the development of bitter taste when the pill is taken.—Pharm. Ztg., l, No. 63 (1905), 663.

Salol-Coated Pills—Improved Method.—P. W. Byrd finds most of the processes for salol-coated pills slow, to produce a smooth and even coating with difficulty, and at best one that is brittle and therefore easily breaks off. He recommends the following method as being free from these objections: To the salol, which is kept liquid on a water-bath as near as possible to its melting-point (107° to 108° Fahrenheit), five per cent. of tolu balsam is added. As the melting-point of the tolu is practically the same as that of salol, a perfect solution results. The pill is fixed on a needle, and is then dipped into the salol and tolu, and then, when removed is rotated between the thumb and finger until the coating has cooled. This insures an even distribution of the salol, and two dippings will generally give a coating sufficiently thick to render the crystallized salol smooth, the pill, still fixed on the needle, is rotated for a few seconds over a heated surface, such as a wire gauze over a Bunsen flame, care being used to bring the pill just near enough to the heat to fuse the salol, which is shown by its glossy appearance. When the pill is cool the needle is removed and the orifice closed with a drop of melted salol and smoothed over with a warmed needle.—South. Drugg. Journ., Jan., 1906, 134.

Tar Pills—Formula.—The "Pharm. Weekbl." recommends licorice root, glycerin and water, in place of yellow wax, calcined magnesia, bolus alba, etc., usually employed for preparing tar pills according to the following formula: Pix liquida, 5.0; rad. liquirit. pulv., 7.0; aqua glycerinata, 2.0. M. f. pilul, No. 100.—Pharm. Ztg., li, No. 3 (1906), 30.

Pills of Volatile Oils—Preparation.—Thos. S. Wiegand, speaking of the trouble encountered by the dispenser when volatile oils are directed in prescriptions for pills, mentions that the trouble is readily obviated by the addition of a small quantity of powdered castile soap.*—Amer. Journ. Pharm., July, 1903, 328.

PULVERES.

Triturations of Potent Medicaments—Convenience for Weighing and Use in Prescriptions.—Thos. S. Wiegand reminds of a practice which faciltates the accurate weighing and distribution of poisonous medicaments with mixtures of other medicaments when preparing powders or pills on prescriptions. It consists in preparing and keeping in stock triturations of such substances as arsenous acid, strychnine, corrosive sublimate, and other potent chemicals, with milk sugar in the proportion of 1 : 16.—Amer. Journ. Pharm., July, 1905, 327.

Dover's Powder—Assay Experiments.—E. F. Kelly describes a number of experiments conducted with the object of devising a method for the assay of Dover's powder. The problem here presented is the separation of the two kinds of alkaloids, those of opium, mainly morphine, and those of ipecac, consisting of cephaeline and emetine. After trying various expedients, the following, depending on the solubility of the ipecac alkaloids in benzol and the insolubility of morphine, gives some promise, inasmuch as it becomes possible to separate the ipecac alkaloids perfectly. The Dover's powder was rubbed into a paste with sodium carbonate solution, and allowed to stand over night to insure alkalinity; it was then dried, powdered, thoroughly mixed with purified sand, placed in a Soxhlet and treated for several hours with benzol. The benzol solution contained the ipecac alkaloids, which were easily separated and identified. The morphine was left in the Soxhlet with milk sugar and the impurities from the ipecac and opium. The mixture was removed, dried, returned to the Soxhlet, and treated with acetic ether, which is one of the best solvents for alkaloidal morphine, but, unfortunately, it is also a good solvent for the resins, and the morphine obtained was therefore too impure for accurate estimation, while any process of purification employed would occasion a loss of morphine. Possibly the use of some other solvent for morphine, such as amyl alcohol, may lead to better results, but this remains for further experiments.--Proc. Md. Pharm. Assoc., 1905, 116–118.

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* A very good way, and in many respects preferable, consists in incorporating the oil with an equal weight of white wax, melted in a small capsule. Rep.

Astringent Powder—Formula.—L. Oberdorfer communicates the following formula for an astringent powder:

Boric acid	4½ pounds
Powdered alum	1½ pounds.
Eucalyptol.	2 drams.
Menthol	2 drams.
Thymol	2 drams.
Oil of wintergreen	2 drams,
Phenol	2 drams.

—The Apothecary, Mar., 1906, 212; from Drugg. Circ.

RESINÆ.

Commercial Resinoids—Ash Percentage and Composition in England.—W. B. Cowie and William Dickson have made a systematic examination of commercial samples of euonymin, iridin, leptandrin and podophyllin, both with regard to the percentage of ash contained in these resinoids and its quantitative composition. For purposes of comparison, extracts were prepared from authentic samples of the drug from which the resinoids are prepared, using 60 per cent. alcohol and the percentage of ash and its composition were determined also. Referring to the original paper for the details, the results may be briefly given as follows:

Green Euonymin lost 5.52 per cent. of moisture and yielded 66.29 per cent. of ash, which on examination proved to be composed almost entirely of *kieselguhr*. The dried resinoid yielded 28.154 per cent. to 90 per cent. alcohol, leaving 71.846 per cent. insoluble residue. The bark of *Euonymus atropurpureus* yielded 22.66 per cent. of extract, dried at 100° C., and yielding 4.58 per cent. of ash.

Iridin lost 13.20 per cent. on drying at 100° C. The dried resinoid yielded 10.34 per cent. of ash, evidently composed preponderatingly of *potassium alum*, with ferric oxide, silicious matter, etc., as impurities. It yielded 24.77 per cent. to 90 per cent. alcohol, leaving 75.23 per cent. undissolved, of which 58.0 per cent. may be calculated as insoluble organic powder. The rhizome of *Iris versicolor* yielded 21.74 per cent. of extract, dried at 100° C., from which 5.55 per cent. of ash was obtained.

Leptandrin, which lost 9.23 per cent. when dried at 100° C., yielded 17.55 per cent. of ash (calculated for the dry substance), which was largely composed of calcium phosphate, some magnesium phosphate and potassium sulphate, with smaller quantities of iron and aluminum phosphates and silicon dioxide. The dried resinoid yielded 71.23 per cent. to 90 per cent. alcohol, leaving 28.77 per cent. of insoluble matter, of which 9.47 per cent. is calculated as insoluble organic powder. Leptandra roots (*Veronica virginica*), when treated with 90 per cent. alcohol, yielded 22.3 per cent. of extract, dried at 100° C., which gave 1.44 per cent. of ash.

Podophyllin lost 3.64 per cent. when dried at 100° C. The dried substance yielded 91.74 per cent. to 90 per cent., and gave 1.31 per cent. of ash, the latter being largely composed of sodium alum, probably used as a precipitant. The quantity of ash, however, is only 0.31 per cent. in excess of the official B. P. limit, and the preparation may be considered practically satisfactory. The rhizome of *Podophyllum peltatum*, when treated by the process of the B. P., yielded 4.35 per cent. of resin, which gave an ash residue practically infinitesimal.—Pharm. Journ., Febr. 21, 1906. 220–221.

Resin of Scammony—Examination of Commercial Sorts.—Speaking of commercial sorts of resin of scammony, T. Guignes mentions that two sorts are at present found on the market which seem to require investigation. One sort is composed of two distinct resins, of which the one is soluble, the other insoluble in ether; the other sort is completely soluble in ether, but its source has not been determined with certainty. While the partial solubility of the American resins derived from *Ipomoea orizabensis* and *I. simulans* in ether, renders the ether test of some value for their recognition as adulterants of scammony resin, the author does not believe that the latter is adulterated with jalap resin, because it is too expensive for this purpose.—Pharm. Ztg., L, No. 88 (1905), 929; from Journ. de Pharm. et Chim., 1905, xxii, No. 6.

SAPONES.

Castile Soap—Examination of Commercial Brands.—L. D. Havenhill has examined six commercial brands of castile soap with the object of determining variations, if any, that might be held accountable for some of the difficulties experienced by different operators in preparing the official liniment of soap. The results are shown in the following table:

Serial number.	Percentage of moisture in bar.	Percentage of moisture in sample tested.	Weight of the residue in Gm. from 30 Gm. of soap treated with alcohol.	Weight of residue insoluble in water.	Alkalinity of 5 Gm. stated in $\frac{N}{10}$ Cc.	Behavior of 4 per cent. alcoholic solution of soap.	Price per pound “wholesale.”
1	18.4	0.70	0.040	0.019	7.0	Gelatinized at 18° C..........	13 c.
2	12.2	2.50	0.210	0.020	8.0	“ “	28 c.
3	12.4	1.70	0.220	trace	4.0	“ “	15 c.
4	17.1	2.40	1.550	0.580	28.0	“ “	8½c.
5	16.9	0.50	0.050	0.021	7.0	“ “	17 c.
6	3.8	1.30	0.900	0.700	5.0	“ “	40 c.

Sample No. 6 was commercial powdered soap. Since the Pharmacopœia admits of 36 per cent. of water in soap, the figures relating to the solubility and the alkalinity should be reduced approximately one-third before comparing them with the official figures. The author, furthermore, believes the gelatinizing test as applied to dried soap to be too rigid and therefore not conclusive. No. 4, although differing widely from the official requirements for solubility and alkalinity, nevertheless furnished a liniment satisfactory in appearance, while only one other sample, not identified in the above table, failed to furnish a liniment that was satisfactory in appearance. The trend of the author's experience appears to be, that there is no difficulty to obtain castile soap on the market that is suitable for the preparation of the liniment, and that the unfavorable criticisms concerning the official formula for the latter are not justified in fact. —Proc. Kans. Pharm. Assoc., 1905, 77–79.

Castile Soap—Practical Observations.—J. B. Moore, whose long experience entitles him to consideration as an authority on practical subjects connected with pharmacy, contributes a very interesting paper on castile soap, in which he discusses the selection, qualities, preservation, and treatment of the soap for the mutual satisfaction of the dealer and customer. Of the many brands of castile soap which he has tried, he is pronouncedly in favor of the well-known "Conti" brand. He has never found another brand that has given such universal satisfaction, believes it to be a pure olive-oil soap and neutral in composition, and has always found it constant and uniform in quality, emollient, healing, soothing and sanitary in its effects. It has been his practice, in order to have the soap present a more elegant and attractive appearance after it has become sufficiently dried so as to be just firm enough to handle, to wash the bars in lukewarm water with a soft sponge to remove all adhering paper, dirt or other extraneous matter, and with a sharp knife cut or scrape off all dark spots or other unsightly disfigurements, and then rinse the bars quickly in *cold* water, wipe them, and stand them on end until they have thoroughly dried. It is astonishing how much the appearance of the soap will be improved by a little washing, cleaning and trimming of this kind. Bars of soap presented to customers in this white, clean and improved condition at once attract attention to the beauty of the soap and enhance its quality in the estimation of customers. Regarding the cutting up of the soap into cakes, as is customary, the author observes that the rough and ragged edges of the cakes should be cut and smoothed off, as far as practicable, by running the sharp edge of a knife over them; otherwise, when the cakes become dry and hard their sharp edges in washing will continue to hurt the hand until they get worn off. In fact, all irregular surfaces which mar the uniform and shapely appearance of the cake should be carefully cut or shaved off. Of course, this trimming and dressing must be done with care and some judgment so as not to unnecessarily mutilate or waste the soap. When this preliminary treatment has been completed the soap should be quickly rinsed off, one cake at a time, with *cold* water, to smooth it and to remove all adhering particles. The cakes should be wiped and set aside immediately, each one resting on its edge in a dry atmosphere until it is well dried, after which they should be wrapped in waxed paper, with, if desired, a suitable inscription. In order to preserve the soap in a condition for cutting (sufficiently moist), the bars are best placed into a heavy tin container, with a closely-fitting hinged lid, and of sufficient capacity to hold an entire original box of the soap. A board being fitted to cover the bottom of this tin, the bars are placed upended into this receptacle and the lid is kept well closed.—Amer. Drugg., Dec. 25, 1905, 348–349.

Fœnugraec Soap—Preparation.—A writer ("E") in "Pharmaceutische Zeitung" (l, No 77, [Sept. 27, 1905] 814) recommends a skin-soap prepared with a distilled extract of fœnugraec as follows: 50 Kgm. of fœnugraec are macerated with 50 Kgm. of absolute alcohol for 8 days in a warm place and the mixture is then subjected to distillation with steam.

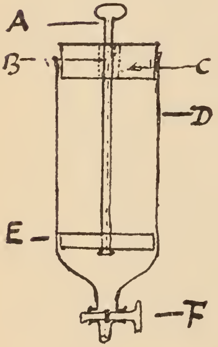
The distilled extract so obtained is then incorporated with ten times its weight of neutral grain-soap. This is first reduced to shavings, then reduced to pulp in a roller-mill, the extract is added, and the magma run through the rollers 5 or 6 times so as to insure thorough admixture; after which it is formed into bars in a ball machine ("bondineure"), cut up, and pressed into cakes of suitable size and shape.

SPIRITUS.

Spiritus Aetheris Nitrosi, B. P.—Preparation.—Using the quantities and following the directions of the B. P. for preparing spirit of nitrous ether, J. Beetham Wilson invariably found that distillation practically stops when the distillate measures 31 ozs.; the missing three ounces can however be obtained in a few minutes by raising the temperature from the prescribed 180° F. to 190° F. Three ounces so obtained and collected separately were found to be free from acid and aldehyde, but contained 1 vol. of NO. From this he infers that the B. P. process may safely be hastened by using a higher temperature towards the end of the distillation.—Pharm. Journ., May 5, 1906, 523.

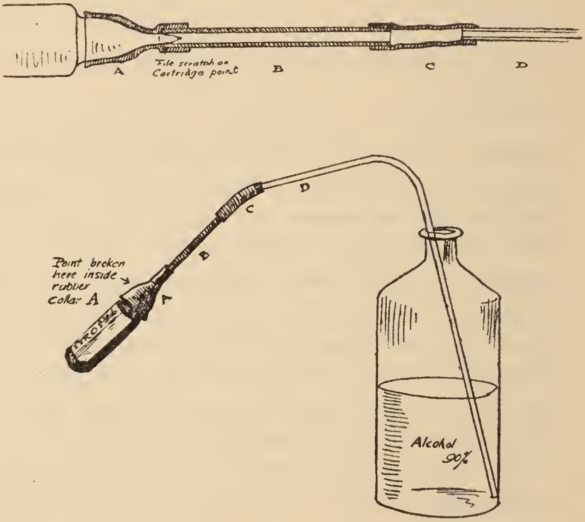
Spirit of Nitrous Ether—Novel Container.—F. A. Upsher Smith describes an amber-glass container for spirit of nitrous ether constructed as shown by Fig. 44. The glass piston-rod (*A*) passes through a cork (*B*) within the glass stopper (*C*) ground to fit the amber-glass cylinder (*D*), into a glass plate (*E*), which acts as a piston; the cylinder is narrowed beneath to form a neck into which a glass cock is accurately fitted by

FIG. 44.



Novel Container.

FIG. 45.


File scratch on Cartridge point
A
B
C
D
Point broken here inside rubber Collar A
A
B
C
D
Alcohol 90%

Opener.

grinding. The glass stopper is so constructed that on giving it a turn air is admitted into the cylinder; the tap being then opened beneath, and the rod depressed so that the glass plate remains just above the surface of the liquid, the spirit may be withdrawn as required without exposure of the remaining contents to the action of air.—Chem. & Drugg., Feb. 17, 1906, 257.

Spirit of Nitrous Ether—Transfer of Concentrated Ether into the Alcohol.—J. Grantley Tingle, having experienced considerable difficulty in opening "itrosyl" (nitrous ether) cartridges and mixing the contents with alcohol without loss, resorted to the devise which is illustrated by Fig. 45. The essential parts are the "opener" provided by the manufacturer for breaking the pointed end of the cartridge, two short pieces of rubber tubing, and a piece of glass tubing about 15 inches long, bent in the middle to an angle of about 100°. The glass tube is attached to one end of the "opener" by one of the short lengths (about 2 inches) of rubber tube. The internal diameter of the other end of the "opener" which is to receive the point of the cartridge has generally to be somewhat increased by some simple means, otherwise some portion of the cartridges will be found too large to enter. Over this end thus adjusted is fixed the second length of rubber tubing, which, fitting closely in the opener, is large enough at the free end to completely embrace the nipple of the cartridge as far as the shoulder. The point of the latter having been simply scratched with a sharp file, and the apparatus fitted as shown in the sketch, the glass tube being immersed in the necessary quantity of alcohol, the cartridge is easily broken by the "opener" within the flexible wide rubber tube, and the outrush of liquid on elevating the cartridge is absorbed by the alcohol absolutely without loss.—Chem. & Drugg., April 21, 1906, 598.

Spir. Armoraciæ Co., B. P.—Practical Observations.—"A junior pharmacist" makes the following practical remarks concerning the preparation of comp. spirit of horseradish: The root may first be put through a sausage machine, and then macerated in water for twelve hours before distilling. The development of the pungent oil, formed by fermentative action on the glucoside of the root, is thus appreciably stimulated. Beware of collecting too much distillate. Towards the end of the operation change the receiver frequently, as the last portions of distillate are apt to be dark-colored.—Pharm. Journ., Sept. 30, 1905, 462.

Spirit of Camphor—Estimation of Camphor.—Raymond J. Nestell recommends the following expeditious method for estimating the camphor in spirit of camphor, which is sufficiently accurate, and is based upon the fact that nearly all the camphor is precipitated from its alcoholic solution on dilution with sufficient water, and that the increase in volume in Cc. of an immiscible solvent is practically equal to the weight in grams of the camphor dissolved: A 100 Cc. glass-stoppered burette is filled to the 20 mark with water and then filled to 0 with the sample to be assayed. The spirit and water are thoroughly mixed by repeated inversions of the burette which is then placed in an upright position to allow the separated camphor to rise to the top. It has been found by experiment that the 80 Cc. of water is sufficient to separate as completely as possible all the camphor from 20 Cc. of a spirit containing 10 per cent. to 15 per cent. of the active constituent. When the camphor has completely risen to the top of the fluid, which should take not longer than ten to fifteen minutes, the stopper is removed from the top of the burette and the clear, liquid stratum is run out at the bottom, care being taken that none of the solid camphor escapes with it. Exactly 25 Cc. of benzene are now introduced, the stopper replaced in the burette and the contents thoroughly mixed. The benzene readily dissolves the camphor, and, after standing for a few moments, its volume is noted. The increase in volume, multiplied by 5, then denotes (approximately, Rep.) the percentage of camphor in the sample of spirit under examination.—Drugg. Cir., Jan., 1906, 5.

Spiritus Saponatus, G. P., IV.—Modification of Manipulation.—Jacobson recommends the following modification of preparing spiritus saponatus, G. P., IV, by which saponification of the oil is more effectual and the product more satisfactory than when the official directions are followed. He uses 600 p. of olive oil, 105 p. potassium hydroxide, 3000 p. alcohol, and 695 p. water. The solid alkali is added to the oil, with one-fourth of the prescribed quantity of alcohol, and placed, in a well-closed bottle, on the top of a plate heated by steam. In the course of a few hours, the alkali will be completely dissolved, and a clear solution results, which is diluted with the remainder of the alcohol and the water, and is set aside for one day. The product is unexceptionable, requires no filtration, and never separates a trace of oil, even on prolonged standing, whilst the spirit prepared according to the official directions (with liq. kali. caust.), invariably separates some uncombined oil.—Pharm. Ztg., l, No. 75 (1905), 792.

A more expeditious method, and one equally effective for preparing the official (G. P., IV), spiritus saponatus, is recommended by Dr. Schaumann as follows: A solution of 210 p. of potassium hydroxide in 290 p. of distilled water, quickly prepared and while still warm, is added to a mixture of 1200 p. of olive oil and 1500 p. of alcohol, and the mixture occasionally shaken during 20 to 25 minutes, when complete saponification will be effected. Then 4500 p. alcohol are incorporated and sufficient distilled water is added to make 12,000 p.—Pharm. Ztg., l, No. 77 (1905), 813.

SUCCI.

Fruit Juices—Preponderance of Citric over Malic Acid.—Kunz and Adam have studied the question of acidity in fruits and fruit juices and found, in agreement with the recent observation of Kayser in the case of raspberry juice, that when both citric and malic acid are present in the same fruit, citric acid is always present in larger quantity than malic acid. Their experiments show that strawberries, elderberries, currants, whortleberries and peaches contain citric acid, but, contrary to the generally-accepted statements, no malic acid that is determinable; huckleberries, gooseberries and apricots contain both citric and malic acid, while cherries and plums contain only malic acid. It would therefore appear that the total acidity of fruit juices, syrups and marmalades from fruits containing both acids, as of course such containing citric acid alone, should be given as citric and not malic acid. Furthermore, the authors have determined that fruits of the same species frequently show variations in their content of the two acids.—Pharm. Ztg., li, No. 46 (1906), 514; from Ztschr. d. Oesterr. Ap.-Ver., 1906, No. 18.

Lemon Juice—Composition.—Hensel and Prinke have determined the composition of lemon juice expressed by them in December, 1905, both immediately after expression and after it had been clarified and kept for three months, and give the results in the following table, showing also the results obtained with lemon juice imported from Sicily:

	Lemon Juice.		Sicilian Juice. Imported.
	Unclarified, direct from the press.	Clarified, after three months.	
Specific Gravity	1.047	1.037	1.28
Extract	9.205	9.104	7.75
Citric Acid	7.18	7.09	5.95
Ash	0.412	0.409	0.38
Phosphoric Acid	0.039	0.038	0.023

The larger content of extract and citric acid, in the juice expressed in Germany is explainable on the ground of drying out during the transportation of the fruits, and probably to some extent also to the inferior quality of the fruit expressed in Sicily. For the purpose of preservation 6.5 per cent. of alcohol is added to the clarified natural lemon juice by the manufacturers.—Pharm. Ztg., li, No. 43, (1906), 479.

Lemon Juice—Alteration with Starch Syrup and Phosphoric Acid.—Matthes and Müller have determined the presence of starch syrup and phosphoric acid in a skillfully adulterated lemon juice. The starch syrup was evidently added to represent the pectin bodies of the natural juice, the phosphoric acid to represent the natural phosphates.—Pharm. Ztg., li, No 10, (1906), 109; from Ztschr. f. Unters. d. Nahrungsm., 1906, No. 1.

SUPPOSITORIA.

Suppositoria Glycerini—Formula of the Saxon Pharmaceutical District Societies.—20 Gm. each of oil of theobroma and glycerin, and 0.5 Gm. of anhydrous wool-fat, are melted together in a flask and shaken until the mass may just be poured from the container. It is then poured into suitable moulds, to form suppositories weighing 3 Gm. each and having the length of 4 Cm. with a diameter 10 Mm. in the thickest part.—Pharm. Ztg., li, No. 3 (1906), 30.

SYRUPI.

Syrupus B. P.—Addition of Alkali to Prevent Crystallization.—F. H. Alcock has observed the frequent crystallization in small batches of Syrupus B. P. (8 oz. of sugar with 4 oz. of distilled water to weigh 12 oz. of product), carefully and accurately made under his supervision. Knowing that treacle seldom crystallizes, and that its ash contains much potash, it was thought that this constituent might account for its non-crystallization. An aqueous solution of sugar, when freshly prepared, is seldom neutral, frequently alkaline, and sometimes acid, the quantity of acidity, it has been found, being directly in proportion to its proneness to crystallization. The suggested remedy to prevent this is the addition of a trace of potassium carbonate (1 grain to the above quantity). Samples prepared with and without this addition, using the same materials, confirm the belief that crystallization is thus prevented.—Pharm. Journ., Dec. 2, 1905, 750.

Fruit Syrups—Clarification.—In his experience in the manufacture of syrups from fruit juices on a large scale Willy Wobbe, has found it advantageous to add a small percentage (2 to 2.5 per cent.) of sugar (blue-free) to the pulped fruit or expressed juice, with the object of accelerating fermentation, and to add from 1 to 2 per cent. of purified talc to the juice after completed fermentation, which will then clarify itself by subsidence. This obviates the necessity of filtering more than the last portions remaining after decantation, or, if filtration is deemed necessary, greatly facilitates that process. Unfavorable criticism of this recommendation having been made by Heimsch, on the ground that the customary method—fermentation without the addition of sugar until the juice mixes clear with one-half its volume of alcohol and subsequent direct filtration—is all-sufficient to secure a presentable syrup, and that the addition of talcum causes the removal of a portion of the coloring matter from the juice, leads the author to admit the efficiency of the customary method if conducted on a small scale; but he insists that when manufacturing fruit syrups on a large scale, the expedients recommended by him are of great advantage, and that, in his experience, the fruit juices suffer no loss in color by the use of talcum, presuming of course that the talcum has been purified by extraction with hydrochloric acid and washing, as advised.—Apoth. Ztg. xx, No. 62 (1905), 609.

Raspberry Syrup—Use of Wine-Yeast for Fermenting the Juice.—Referring to Wobbe's suggestions concerning the clarification of fruit syrups, Wilh. Mühlenfeld calls attention to the advantage of inciting the fermentation in raspberry juice by means of wine-yeast, and describes the method of obtaining pure cultures of the ferment, *Saccharomyces elipsoides*, Hansen, and their application for this purpose. Fermentation sets in promptly, there is less liability of the formation of undesirable fermentation products, and is completed more rapidly than if the spontaneous fermentation of the juice is depended on: but being more rapid and stormy than spontaneous fermentation it is advisable to conduct it in a room having a temperature not exceeding 20° C.—Apoth. Ztg., xx, No. 64 (1905), 630.

Syrup of Creosote—Formula.—Albert E. Ebert furnishes the following formula for a "Syrup of Creosote:"

Glycerite of creosote (see under "Glycerita")	2½ fl.oz.
Simple syrup	13½ fl.oz.

Mix.

This preparation contains about 1.25 per cent. of creosote.

The author cautions against an error which is sometimes made by the dispenser in reading a prescription calling for *Syrupus cerasorum*, which is the syrup of cherries of the Pharm. Germ., and which may be due to poor writing or to improper abbreviation in the prescription.—Meyer Bros. Drugg., July, 1905, 197.

Syrupus Eriodictyi Aromaticus, N. F.—Clarification.—In order to produce a perfectly clear aromatic syrup of yerba, N. F., Paul Caldwell says that the oils should be mixed with the fluidextract and alkali together with the water, and the whole filtered through magnesium carbonate until the filtrate makes a clear mixture with water. The sugar may then be added and dissolved.—Drugg. Circ., May, 1906, 159.

Syrup of Ferrous Iodide—Avoidance of Heat.—In the belief that syrup of ferrous iodide is injured if heat is used in its preparation, Paul Caldwell recommends that the U. S. P. directions be followed to the point where the mixture of iodine, iron and water is to be heated to effect complete reaction. Instead of heating, he now adds (for the pharmacopœial quantities) 2 drachms of reduced iron, whereupon a complete reaction takes place immediately. For preserving the syrup, he recommends the addition of 7 grains of citric acid to a 12 oz. bottle full to the neck, and to expose it to the sunlight two or three days.—Drugg. Circ., July, 1905, 220.

In a second paper the author suggests that, following the process of the

U. S. P., VIII, it is better the hypophosphorous acid be added after the reaction has taken place between the iodine and iron, but before filtration, so that the acid may combine to form an iron hypophosphite, which he believes to be a better preservative than the free acid. Moreover, the finished product will be neutral as the Pharmacopœia requires, which it cannot be in the presence of free acid.—Ibid., May, 1906, 159.

Syrup. Glycerophosph. Co. B. P. C.—Modification of Formula.—E. W. Mann has experinced considerable trouble in producing a presentable compound syrup of glycerophosphates by the formula of the B. P. C. Formulary. A large deposit is produced, and even when filtered perfectly bright, the syrup becomes turbid on standing. A portion of the deposit was found to consist almost entirely of calcium citrate. This compound is doubtless produced by interaction between the citric acid and the calcium glycerophosphate, and the substitution of an equivalent amount of acetic acid for the total citric acid is recommended to avoid the formation of the deposit.—Pharm. Journ., Dec. 9, 1905, 788.

Compound Syrup of Glycerophosphates—Formula.—Reginald Edgar Dyer recommends the following formula for a compound syrup of glycerophosphates, which is based on the well-known formula for Churchill's syrup:

Calcium glycerophosphate	35 Gm.
Potassium glycerophosphate	17 Gm.
Sodium glycerophosphate	17 Gm.
Sugar	500 Gm.
Diluted phosphoric acid	2 Cc.
Spirit of lemon	5 Cc.
Water, sufficient to make	1000 Cc.

The glycerophosphates are to be mixed and triturated with 450 Cc. of water and the diluted phosphoric acid until they are dissolved, add the spirit of lemon and filter. Dissolve the sugar in the filtrate, by agitation, without heat, and add enough water through the filter to make 1000 Cc. —Pract. Drugg., Dec., 1905, 265.

Syrup of Hydriodic Acid, U. S. P., 1890—Dispensing Note.—When dispensing a prescription demanding equal parts of syrup of hydriodic acid and distilled water, Edward Kleine observed the immediate formation of a deep-yellow color, although the syrup was in apparently perfect condition, as obtained by the formula of the U. S. P., 1890. Having been kept in the refrigerator, the author conceived the idea that temperature might have something to do with the reaction, and this was confirmed when the water was chilled from the temperature of the store to that of the syrup. A colorless mixture was at once obtained.—Amer. Drugg., Oct. 9, 1905, 200.

Syrup of Iodotannin—Formula.—Vigneron suggests the following simple method for preparing a syrup of iodotannin, which is superior to the syrups made with rhatany, and is more palatable than that made by the direct combination of tannin and iodine in the presence of syrup: Iodine, 2, is rubbed to powder in a glass mortar with a little sugar and introduced, with water, 180, and pure tannin, 4, into a wide-mouth glass-stoppered flask, and kept on the water-bath at a temperature of about 70°–80° C. for an hour. The cloudy liquid thus obtained is allowed to deposit for thirty-six hours in a warm place; a spongy yellowish-brown sediment is thus thrown down. The supernatant liquid is then tested with starch paper for free iodine. If this be present the liquid is again heated on the water-bath until combination is complete. The liquid is then filtered on to sugar, 355, and warmed on the water-bath to dissolve the latter. The weight is then made up to 1,000, with simple syrup. Thus prepared the syrup is yellowish-green by transmitted light and slight reddish by reflected. Its flavor may be improved by substituting syrup of bitter orange, 100, for the same quantity of simple syrup when making up to weight.—Pharm. Journ., July 22, 1905, 97; from Journ. de Pharm. et Chim., 1905 (6), *21*, 538.

Syrup of Ipecac—Improved Formula.—In connection with a paper on ipecac, partaking of the nature of a review of its history, official sources and varieties, composition and methods of assay, L. V. S. Stanislaus makes some practical observations concerning the official syrup. The U. S. P. of 1870 directed 5 parts of the fluidextract mixed with 95 parts of the syrup. The last two revisions direct a 7 per cent. syrup, with acetic acid and glycerin added. From the standpoint of keeping-qualities, a syrup thus prepared leaves room for improvement, for the acetic acid causes the inversion of cane sugar and consequent souring. The author recommends the following formula, which is free from the objections mentioned, and yields a syrup of good keeping-qualities, prompt in its action and expeditious of preparation:

Fluidextract of ipecac	30 Cc. or	1 fl. oz.
Alcohol	45 Cc. or	1½ fl. ozs.
Ammonia water, stronger	2 Cc. or	30 m.
Syrup, U. S. P.	525 Cc. or	17½ fl. ozs.

Mix, let stand 24 hours and filter. This is practically a 5 per cent. syrup.

—Amer. Drug., Dec. 25, 1905, 350.

Syrupus Kolæ Compositus—Formula.—The Antwerp Apothecaries Society has adopted the following formula for a specialty which is exploited under the name of "Syrupus Kolæ Compositus": Strychnine nitrate, 0.075 Gm.; fluidextract of kola, 25.0 Gm., and sodium glycerophosphate, 25.0 Gm., are dissolved by the aid of heat in 200.0 Gm. of syrup of orange-peel.—Pharm. Ztg., li, No. 3 (1906), 30.

Syrup of Licorice, N. F.—Manipulation.—In order to produce a perfectly bright and stable syrup of licorice by the N. F. formula, Leonard A. Seltzer manipulates as follows: The licorice mass (pure extract of licorice U. S. P.) is dissolved in the water on a water-bath, adding a little ammonia water from time to time to keep the glycyrrhizin in solution, but avoiding an excess detectable by smell or taste. After cooling, the white of an egg is added, well mixed and the liquid is again heated until the egg-white is coagulated. To remove the coagulum formed, some paper-pulp is added, and the liquid is passed through a layer of clean excelsior, returning it until it passes clear. The sugar is then disolved in the filtrate in the usual way.—Proc. Mich. Pharm. Assoc., 1905, 52.

Compound Syrup of Squill, U. S. P. VIII.—Improved Formula.—Paul Caldwell characterizes compound syrup of squill as being usually cloudy and states that its cloudiness may be prevented by the following method; To the fluidextracts add 5 per cent. of the total of the finished product, of glycerin and of alcohol and a sufficient quantity of water. Filter through magnesium carbonate, returning the filtrate until it passes entirely soluble in water. Add the sugar and dissolve.

Syrup of Senega, U. S. P. VIII, is also usually cloudy and unsightly. To prepare a presentable syrup, add 5 per cent. of the finished product, of alcohol, and the same amount of glycerin, to the fluidextract, and water to make 500 Cc., filter through magnesium carbonate and return the filtrate to the filter until it passes entirely soluble in water, dissolve the sugar in the filtrate and strain.—Drugg. Circ., May, 1906, 159.

Compound Syrup of Tamarinds—Formula.—Albert E. Ebert recommends the following formula for preparing a compound syrup of tamarind:

Fluidextract of senna	2 fl. ozs.
Fluidextract of buckthorn	1 fl. oz.
Prepared tamarind pulp	4 av. ozs.
Potassium bitartrate	60 grains.
Simple syrup sufficient to make	16 fl. ozs.

Place the tamarind pulp, cream of tartar and the fluidextracts in a porcelain dish, place over a water-bath and apply heat, then add 8 fluidounces of syrup and pass through a cotton strainer, adding sufficient simple syrup to make 16 fluidounces of the finished product.—Meyer Bros. Drugg., March, 1906, 63.

Syrup of White Pine and Tar—Formula.—Using the N. F. formula for compound syrup of white-pine as a basis, Paul Caldwell proposes the preparation of a syrup of white pine and tar as follows: Macerate the drugs with 5 per cent. of the finished product of glycerin, and incorporate about 1 pound of magnesium carbonate for each 5 pounds of drugs. Use a menstruum composed of one part of alcohol and two parts of water. To the alcohol of the menstruum for 5 gallons of syrup add 1 pint of oil of tar and a convenient quantity of magnesium carbonate, after which add water. Shake well and pour on the drug. After macerating twenty-four hours start the percolation, returning the percolate until it passes perfectly miscible with water. Add the sugar and strain.—Drugg. Circ., May, 1906, 159.

Syrup of Wild Cherry—Recommendation to Return to the U. S. P. Formula, 1890.—Joseph W. England, after tracing the history of syrup of wild cherry through its evolution in the U. S. P. revisions since its introduction in 1850, recommends a return to the formula of the U. S. P., 1890, in which the glycerin directed is used for the extraction of wild-cherry, whereas in the present formula (U. S. P., VIII) the same quantity of glycerin is added to an aqueous infusion, in which the sugar is subsequently dissolved. The 1900 syrup is of an amber color and insipid taste, while the 1890 syrup, made from the same bark is of a deep ruby-red color, and, while much more astringent in taste, is much more characteristic of the bark. He recommends a slight modification of the 1890 formula as follows: Wild cherry, in No. 20 powder, 5 oz. av. (150 Gm.); sugar, granulated, 24 oz. av. (720 Gm.); glycerin, 4 fl. oz. (125 Cc.); water, a sufficient quanty to make 2 pints (1000 Cc.). Mix the glycerin with ten fluidounces of water (300 Cc.). Moisten the wild cherry with a sufficient quantity of the liquid, and macerate for twenty-four hours in a covered vessel; then pack it firmly in a cylindrical percolator, and pour on the remainder of the menstruum. When the liquid has disappeared from the surface follow it with water until the percolate measures 15 fluidounces (450 Cc.). Dissolve the sugar in the percolate by agitation, without heat, strain and pour enough water through the strainer to make the product measure 2 pints (1000 Cc.). Mix thoroughly.—Amer. Journ. Pharm., June, 1906, 267–270.

TABELLÆ.

Tablets of Insoluble Powders—Method of Securing Disintegration.—Discussing the difficulties encountered in the manufacture of tablets of insoluble powders which, while sufficiently firm to resist disintegration while being handled in stock, shall disintegrate rapidly when placed in contact with fluids, Wm. J. Lowry, Jr., observes that cornstarch made into a paste with hot water and used for the different cases of granulation as they come up, sometimes plus a little uncooked starch, will disintegrate any insoluble tablet, and the granules can be run as they are, with the addition of the lubricants necessary for all tablets, or just as they are, as the case may be. In this connection the discussion following the reading of the paper will be consulted with interest. Mr. Dunning has found a solution of gelatin to answer well for the granulation, and believes it to be superior to starch.—Proc. Md. Pharm. Assoc., 1905, 26–33 and 78–80.

TINCTURÆ.

Tinctures and Fluidextracts—Determination of Extract, Alcohol Content, etc.—Dr. Adalbert Panchaud discusses the influence of modern industrial methods on the practice of pharmacy, which have made it unprofitable for pharmacists to prepare many of the official galenicals, and even such simple preparations as tinctures, not to speak of fluidextracts and extracts. The ever-increasing disposition and practice to purchase such from the manufacturer, make it not only desirable but imperatively necessary that simple and convenient methods of examination, based upon prescribed standards, should be devised, so that it may become possible to determine the quality of the preparation within a reasonable degree of accuracy. Qualitatively, the determination of the intensity of color on dilution of a tincture with water, or the effect of such dilution with the smallest volume of water to a specific volume of the tincture (turbidity, opalescence, etc.), may indicate, approximately at least, the content of extract and alcohol; but assurance of correct quality can only be obtained by quantitative determinations. Specific gravity, by itself, is of no value, since an excess of water raises the specific gravity and leads to faulty interpretation of the extract content, whilst an excess of alcohol, lowering the specific gravity, is equally misleading in the other direction. In the case of tinctures from alkaloidal drugs, the prescribed method of assay is of course the most certain means of determining quality; but even here it is important that a knowledge of the extract content should also be had, for in many instances the activity of the drug is not solely due to the alkaloid-content. Moreover, assay processes are not available in many of the drugs, either because of the absence of alkaloids, or for other reasons; and while even here the determination of the extract may in some cases be misleading, owing to the volatilization of some of its constituents, the author believes on the whole that the determination of the extract content and of the alcoholic strength of a tincture will prove of great service in determining the correct quality of tinctures supplied by manufacturers. But to make such examinations available as criterions of quality, it becomes necessary to establish standards, for which purpose he suggests that experiments be made according to the following directions and the results communicated to the pharmaceutical journals:

Alcohol Determination: Dilute 25 Gm. of the tincture with 25 Gm. of water, and distil the mixture by the heat of an asbestos plate until three-fourths has distilled over. Dilute the distillate to 50 Gm., determine the specific gravity, and from this the percentage of alcohol, by weight.

Extract Determination: From 2–4 Gm. of the tincture are evaporated to dryness, in an aluminum dish, at 105°–110° C., allowed to cool in the exsiccator, and weighed after half an hour.

Alkaloidal Assay: Distil the alcohol from 25 Gm. of the tincture to 6 Gm., and subject this to assay.

In the case of fluidextracts it is not important to determine the alcohol content (? Rep.), since the percentage of alcohol depends on the amount of solid extract in the preparation. In addition to the assay, which must invariably be made when the fluidextract is prepared from an alkaloidal drug, the determination of dry extract will suffice. A collection of data covering the results obtained by a large number of experimenters will eventually enable the establishment of standards, which will prove useful and convenient for the examination of purchased tinctures and fluidextracts. The author's paper is concluded with a table exhibiting the specific gravity, alkaloid and extract-content of 43 tinctures official in or proposed for the Swiss Pharmacopœia.—Schweiz. Wchschr. f. Chem. u. Pharm., xliii, No. 41 (1905), 558–561.

Narcotic Tinctures—Gravimetric Alkaloidal Determination.—Ph. Roeder recommends the following method for determining the alkaloidal content of narcotic tinctures: 120 Gm. of the tincture are evaporated on the water-bath to about 6 Cc., the residue is then transferred with the aid of 5 Cc. of ammonia water, and a little water into a 100 Cc. flask, 60 Gm. of a mixture of chloroform (3), alcohol (1), and ether (7 parts) are then added, and the mixture is shaken one hour. After subsidence 50 Gm. of the ethereal solution are carefully decanted and shaken out with 20, 10, 10 and 10 Cc. of 3 per cent. hydrochloric acid, the united acid liquids are washed twice with 10 Cc. of the chloroform, made alkaline with ammonia, and then shaken out with four successive portions, each of 10 Cc. of chloroform. The chloroform solutions are evaporated on a water-bath, dried three hours and weighed.—Pharm. Ztg., li, No. 28 (1906), 322.

Tinctura Calumbæ, U. S. P., VIII—Addition of KOH Solution to Effect Clarification.—Paul Caldwell finds that the addition of 6 minims of solution of potassium hydroxide per pint of tincture of calumba will insure a preparation which will filter easily and clear.—Drugg. Circ., May, 1906, 159.

Tinctura Camphoræ Composita, B. P.—Method for Determining its Morphine Content.—Under the Sale of Food and Drugs Acts it is incumbent upon the inspector to ascertain the amount of morphine present in a sample of compound tincture of camphor (= Tinct. Opii Camph., U. S. P.), and this is a difficult operation when the official B. P. process for the assay of opium is applied to the preparation. F. C. J. Bird has, however, worked out a method which answers well with as little as 2.5 Cc. tr. camph. co. (containing rather more than 1 Mgm. morphine), although 10 Cc. is recommended as the most suitable quantity.

Take compound tincture of camphor, 10 Cc., evaporate to dryness on a water-bath, take up with dilute alcohol and a minute drop of acetic acid, evaporate again to dryness, and dissolve the residue in 2 Cc. distilled water (one drop of this solution tested with Mayer's Solution should give a copious precipitate). Filter the aqueous solution and wash the filter with distilled water. Transfer to a small separator and extract with hot amylic alcohol and a few drops of a saturated solution of potassium carbonate. Separate the amylic alcohol and wash the same with ½ Cc. distilled water. Repeat the amylic extraction twice and evaporate the mixed amylic extracts on a water-bath to dryness (the amylic residue from a genuine tincture is, at this stage, brownish-yellow, but if no opium is present nearly colorless). Dissolve the amylic residue in 2 Cc. distilled water and 4 drops of dilute hydrochloric acid. Filter the solution through a tiny filter, with a little pulv. cretæ gal. to remove color, until perfectly bright, and wash the filter with distilled water. Extract the clear aqueous solution in a separator with 4 Cc. hot amylic alcohol and sufficient powdered ammonium bicarbonate to make alkaline, and repeat the extraction twice with successive 2 Cc. quantities of hot amylic alcohol. The mixed amylic extracts should be quite colorless and measure 8 Cc.

Evaporate 2 Cc. of the amylic extract to dryness in a very small glass basin, concentrating the residue onto one spot ; place on a white surface and moisten the residue with a very dilute solution of neutral ferric chloride. A perfectly distinct dirty-blue coloration characteristic of morphine should appear.

Another 2 Cc. evaporated in a similar manner should afford an orange-yellow color with nitric acid.

The reactions may be compared with those obtained from 10 Cc. of a known sample of tr. camph. co. carried through the process at the same time, when there should be no difficulty in coming to a conclusion as to the approximate correctness or otherwise of any sample in question. It is very important that the amylic alcohol be specially redistilled ; it should boil between 128° and 132° C., and 20 or 30 Cc. evaporated in a glass capsule on the water-bath should not leave the slightest residue.—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 459–462.

Tincture of Digitalis—Identification According to the Austrian Pharmacopœia, VIII.—The new Austrian Pharmacopœia directs the following method for the identification of tincture of digitalis : 10 Gm. of the tincture and 10 Gm. of water are mixed, evaporated to one-half the volume on a water-bath, the residual liquid precipitated with basic lead acetate, filtered, and the filtrate shaken out with chloroform. On evaporating the chloroformic solution, a residue is obtained, which when dissolved in concentrated sulphuric acid, produces a violet color on adding a little bromine water.—Pharm. Ztg., li, No. 28 (1906), 322.

Compound Tincture of Gentian, B. P.—Percentage of Dry Residue on Evaporation.—The solids remaining on evaporating the official (B. P.) compound tincture of gentian vary according to different experiments from 3.76 to 5.5 per cent. F. H. Alcock records experiments in which determinations were made directly on the properly prepared tincture and also on tincture prepared from the drugs separately with the same menstruum and in the proportion in which they are represented in the compound tincture. The results show that the percentage of total solids in the B. P. tincture is 4.6 per cent. to 4.8 per cent., according to the longer or shorter maceration; that on the basis of the results obtained with the tinctures from the individual drugs, 4.15 per cent. is derived from the gentian alone, and that on this basis the yield of solids should have been 5.54 per cent. —Trans. Brit. Pharm. Conf. (Yearbook of Pharm.), 1905, 423–425.

Tincture of Iodine—Convenient Manipulation.—Paul Caldwell suggests the following simple method (which is not new) for conveniently preparing tincture of iodine: Procure a wide-mouthed bottle of suitable size with a good cork. Nearly fill with alcohol and into its neck so insert a piece of cheese-cloth or absorbent gauze that it will sag down below the surface of the liquid. Into this place the iodine. This arrangement compels a circulation of the menstruum and the iodine is consequently more quickly dissolved.—Drugg. Circ., July, 1905, 220.

Tincture of Myrrh, B. P.—Test for Suitable Quality of Myrrh.—J. H. Alcock points out that myrrh varies greatly in alcohol-soluble content, and recommends that a simple statement of a test of suitable quality of the drug might be given in the following lines: 1 Gm. of myrrh, in coarse powder added to 20 Cc. of 90 per cent. alcohol contained in a well-stoppered bottle, placed in a warm place (38° C.) for three hours, and shaken occasionally, should yield a solution, 10 Cc. of which, when filtered, should, on evaporation at 100° C., and dried for one hour, yield not less than — per cent. of residue, the exact amount to be fixed on a basis to be determined by those who advise in such matters.—Pharm. Journ., April 7, 1906, 407.

Tincture of Opium.—Method of Preparation.—Discussing the provisions of the Brussels Conference, according to which tincture of opium is to be made by percolation with 70 per cent. alcohol, E. Beuttner questions the efficiency of alcohol of that strength in contrast with a more dilute alcohol, such as the diluted alcohol of the U. S. P., for instance. He also questions the advantage of the process of percolation over that of the older process of maceration heretofore indicated in most of the European Pharmacopœias, but as a compromise recommends a combination of maceration and percolation, similar to that directed in the U. S. P. He directs that 10 p. of opium, mixed with 5 p. of calcium phosphate, be macerated for several days with 75 p. of diluted alcohol; then, having transferred the mixture to a percolator, allowing the liquid to drain, returning it until it passes clear, and finishing by percolation with more diluted alcohol until 100 p. of tincture are obtained. But here also it is by no means certain that the opium is completely exhausted. Moreover, when operating on large quantities, the percolation proceeds very slowly and may even be interrupted completely.—Schweiz. Wschr. f. Chem. u. Pharm., xliii, No. 40, (1905), 542.

Tincture of Opium—Simple Manipulation.—With the object of expediting the process of preparing tincture of opium, Burr W. Overton has made a number of experiments which lead him to recommend the following modification of the official method of manipulation: 100 Gm. of granulated opium, assaying 14 per cent. morphine, were placed in a percolator, and sufficient diluted alcohol was poured on the opium to thoroughly moisten and leave a stratum above it. After macerating twelve hours percolation was started, sufficient diluted alcohol being added until, by slow percolation, 1000 Cc. of tincture was obtained. The product, assayed by the U. S. P. process, contained 1.37 per cent. of morphine. The time consumed was a little less than 24 hours.—Proc. Ky. Pharm. Assoc., 1905, 92.

Tincture of Opium—Expeditious and Efficient Manipulation.—Paul Caldwell recommends the following manipulation for preparing tincture of opium, which is not alone quite efficient, but does away with the tedious percolation officially directed: Place the prescribed amount of water over a fire and heat to boiling, remove the fire, and immediately add the opium and stir until no lumps are visible. Allow this mixture to cool to about 100° F., and add the alcohol and enough water to offset the evaporation. Use talcum in filtering as precipitated calcium phosphate removes quite an appreciable quantity of coloring matter from the tincture, and bring the product up to the required volume by adding diluted alcohol through the filter.—Drugg. Circ., July, 1905, 221.

Tinctura Persionis, N. F.—Manipulation.—Geo. W. Parisen finds the percolation of cudbear in fine powder to be quite tedious and slow; but if the drug is mixed with three times its bulk of fine sand (beach sand or fine gravel); percolation is quite rapid and the exhaustion very complete. A plug of absorbent cotton in the orifice of the percolator will secure a perfectly bright percolate.—Proc. N. J. Pharm. Assoc., 1905, 74.

Tincture of Quinine, B. P.—Simple Method of Testing.—H. Wippell Gadd and Sydney C. Gadd recommend the following simple method for ascertaining the strength of tincture of quinine of the B. P.: Take 1 fl. oz. and evaporate to dryness. Dissolve the residue in a mixture of ½ fl. drachm of dilute hydrochloric acid and 2½ fl. drachms of water. Transfer to a separator and agitate with 3 fl. drachms of chloroform and an excess of solution of ammonia. Set aside. Run off the chloroformic layer into a tared dish, and repeat the agitation with 3 fl. drachms of chloroform, which was run off as before, into the same dish, and evaporate the united liquids to dryness. The residue should weigh not less than 6 grains.—Pharm. Journ., Dec. 30, 1905, 901.

Tincture of Vanilla—Improved Formula and Manipulation.—Paul

Caldwell recommends that tinctures of vanilla be prepared by the following formula: Vanilla, 1 av. ounce; sugar, 2 av. ounces; water (1 part) and cologne spirit (2 parts), enough (for 1 pint?). Cut the vanilla beans into pieces about one inch in length and macerate them twelve hours in a sufficient amount of menstruum after which force them through a galvanized meat-cutter, which reduces them to a pulp. To this add the sugar and transfer the mixture to a suitable glass container. Add all the menstruum necessary to make the required amount, and allow to macerate as long as it is possible to do so—six weeks at least—before filtering. It is well known that the longer the maceration is continued the better the flavor will be.—Drugg. Circ., July, 1905, 220.

In a subsequent paper, the author recommends the addition of 1 dram of potassium carbonate for each 8 ounces of vanilla bean used. This facilitates filtration, which otherwise is quite slow, and does not affect the taste.—*Ibid.*, May, 1906, 159.

Tincture of Vanilla—Method of Analysis.—Joseph L. Mayer suggests the adoption of an assay process fixing a standard for the minimum content of vanillin in tincture of vanilla, and also qualitative tests to determine whether the material used is vanilla, for tonka or cumarin, and for caramel or other coloring matter. The author finds a colorimetric method available for determining the amount of vanillin in the sample, which depends on the production of a bluish green color in an aqueous solution of vanillin on adding a few drops of bromine water followed by solution of ferrous sulphate. The chromatic scale for comparison is made by placing a 0.05 per cent. solution of vanillin, in progressive quantities from 0.5 Cc. to 1, 2, 3 Cc., etc., into Nessler tubes, adding distilled water to the 50 Cc. mark, and then the reagents, continuing the addition of the ferrous sulphate solution (10 per cent. freshly prepared) until the maximum color is developed. The sample to be tested is decolorized by means of freshly precipitated lead hydroxide; 2 Cc. being diluted with water, sufficient lead hydroxide added, the decolorized mixture filtered, and the residue or filter washed with water to make 100 Cc. Of this solution, 50 Cc. are tested with the reagents named, and the color compared with the chromatic scale previously prepared. The author's further suggestions, concerning quantitative tests, may be consulted in the original.—Merck's Rep., June, 1906, 160.

TROCHISCI.

Trochisci Phenolphthaleini—Formula.—The Bournemonth Pharmaceutical Society Formulary, 3d ed., recently issued, gives the following formula for a phenolphthaleine lozenge: Phenolphthaleine, 2 grains; chocolate basis, a sufficient quantity. Make a lozenge. Dose: 1 to 4 lozenges.—Pharm. Journ., Mar. 31, 1906, 385.

UNGUENTA.

Ointment Bases—Critical Review and Practical Observations.—W. Lester MacFadden critically discusses the several agents used as ointment bases, points out their respective merits and uses, gives hints as to the combinations of different substances for given purposes, and makes numerous suggestions regarding ointment manufacture. The following headings and titles under which the author discusses his subject may serve to point out the comprehensiveness with which this paper deals with the substances that are modernly used for the preparation of ointments:

1. *Hardening Agents.*—Beeswax (yellow, m. p. 145° F.; white, m. p. 148° F.); spermaceti (m. p. 115°–120° F.); oil of theobroma (m. p. 95°–98° F.); stearin (m. p. 150° F.), paraffin (m. p. 130° F.); rosin (m. p. 275° F.); stearic acid (m. p. 133° F.).

2. *Emollient Agents.*—Lard (m. p. 100° F.); suet (m. p. 115° F.); adeps lanæ (m. p. 100° F.); petrolatum (m. p.); olive oil, almond oil, etc.; soap.

3. *Miscellaneous Agents.*—Ammonium stearate, sodium stearate, potassium stearate, ammonium oleate, casein.

The paper is concluded with practical observations on the manipulation of ointments, in which he makes such comment upon technique as will guard against failure from causes that transpire during the manipulation. —Boll. Pharm., May, 1906, 203–206.

Paraffin Ointment, B. P.—Manipulation.—Peter Boa, in a preliminary report on ointments to the Br. Pharmacopœia Committee, states that the present formula for paraffin ointment is unobjectionable, but that there is difficulty in the manipulation to secure an ointment that shall be uniform in appearance (free from lumps) and at the same time plastic. He finds that a plastic but more or less lumpy ointment is obtained by following the official directions to stir until cool, and that if it then is passed through a wire sieve, the ointment also becomes quite uniform—thus conforming to the official description "uniform and plastic."—Pharm. Journ., Mar. 24, 1906, 343.

Paraffin Ointment, B. P.—Improved Formula.—William Swan recommends the following formula as yielding an ointment base in every respect superior to the B. P. paraffin ointment: Wool fat, 2 parts; hard paraffin, 2 parts; soft paraffin, 6 parts. Melt together in a shallow dish and triturate constantly as the liquid cools, until, when cold, a uniform plastic ointment is produced.—Chem. & Drug., Feb. 17, 1906, 259.

Saccharine Dermatologic Ointments—Formulas.—According to Hodara, dermatologic preparations containing sugar have proven useful for the treatment of psoriasis. The following formulas are recommended:

1. Lanolin, vaselin, āā 20.0; powdered sugar, zinc oxide, glycerin, sulphur, āā 10.0. Mix.

2. Lanolin, vaselin, āā 30.0; powdered sugar, 20.0; glycerin, sulphur, āā 10.0; chrysarobin, 1.0 to 2.0 Gm. M.—Pharm. Ztg., li, No. 3 (1906), 30; from Journ. de Pharm. d'Anv.

Boric Acid Ointment—Rational Process of Preparation.—M. Nyman has studied the disinfectant action of boric acid ointment from the theoretical standpoint and differentiates between disinfectant, antiseptic and aseptic preparations. The aseptic and the greater or less antiseptic properties of this salve are its more important qualities. It is well known that boric acid in aqueous solution is a very weak antiseptic; but when it became known that this acid is capable of producing compounds with various substances in which the boryl radical (BO) enters into combination, producing strongly acid bodies, these were subjected to experiment and found to have strongly antiseptic properties. A distinction must therefore be made between simple mixtures of boric acid and paraffin salve, and with ointments made by heating boric acid with fats at higher temperatures (80° C.). In the latter, by the action of the boric acid on the glycerin of the fat ($C_3H_5(OH)_3+H_3BO_3=C_3H_5(OH)_2OBO+2H_2O$), will contain the actively antiseptic boryl radical.—Pharm. Ztg., li, No. 41 (1906), 461; from Farmaceutiskt Notisblad, 1906, No. 4.

Capsicum Ointment, B. P.—Improved Formula.—A. W. Gerrard recommends the preparation of the official (B. P.) capsicum ointment from a concentrated liquid extract of capsicum (which see under "Fluidextracta"), as follows: Liquid extract of capsicum, 60 grains; olive oil, 1 oz.; spermaceti, 60 grains. Melt the spermaceti with the oil, stir in the extract, and allow to cool. A more rational and superior ointment, however, is a

Lanolin Ointment of Capsicum, obtained by substituting 1 oz. and 60 grains of lanolin for the oil and spermaceti.—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 455.

Diachylon Ointment.—Method of Preparation.—Arzberger obtains a satisfactory diachylon ointment by using freshly prepared diachylon plaster, which should retain the glycerin resulting during its preparation, and manipulating as follows: Equal weights of the plaster and olive-oil are melted together and stirred for a short time, until the mixture becomes thick liquid, and a thin film begins to form on the surface. It is then allowed to cool completely without further stirring, and preserved in a cool place. The ointment should not be dispensed after it is 6 or 8 weeks old, and old lead plaster should never be used for its preparation.—Pharm. Ztg., li, No. 3 (Jan. 10, 1906), 30; from Pharm. Post, 1905, No. 53.

Wilkinson's Sulphur Ointment—Improved Formula and Method of Preparation.—Arzberger recommends the following formula for preparing Wilkinson's Ointment, which yields a more satisfactory preparation than the formulas heretofore recommended (see N. F., 3d Ed., p. 191): Melt together 6 parts of lard and 6 parts of suet, and add the melted mixture to 12 parts of hot potash soap, previously melted on the open fire. After thorough admixture and partial cooling, 1 part of chalk and 6 parts of flowers of sulphur are sifted gradually and consecutively into the mixture of fats and soap, stirring well; then, after the mass has cooled completely, 6 parts of tar are mixed with it, observing that the tar shall be of a thick-liquid consistence, otherwise it is liable to separate from the ointment on standing. Such separation may, however, also be prevented by incorporating 5 per cent. of spiritus saponis kalinus with the finished ointment. —*Ibid.*

Diachylon Ointment.—Preparation.—Referring to Arzberger's suggestion that diachylon ointment should be prepared only from freshly-made lead plaster (see above), a correspondent ("Ha") of the Pharmaceutische Zeitung remarks that this demand is not practicable; nor is it necessary, since old diachylon plaster, otherwise in good condition, will readily produce a therapeutically efficient and acceptable ointment. On the other hand, the ointment itself should always be freshly prepared as it is needed. The addition of a certain proportion of vaseline, however, is a desideratum, the proportions of 2 p. of lead plaster and 1 p. each of olive-oil and vaseline forming a homogeneous ointment possessing reasonable stability.—Pharm. Ztg., li, No. 17 (1906), 190.

Diachylon Ointment.—Preservation.—It is stated in the "Südd. Apoth.-Ztg." (1905, No. 44) that diachylon ointment (Ungt. Hebræ) may be preserved perfectly by placing it in a jar and covering the surface with water, which may be changed once a month, though even this is not particularly necessary. The ointment has been kept in this way for as much as six months, being then as fresh as when first made.—Pharm. Ztg., l, No. 63 (1905), 663.

Unguentum Hydrargyri Ammoniati, U. S. P., VIII—Modified Process. —Paul Caldwell finds that a perfectly smooth ointment of ammoniated mercury is easily made if anhydrous wool-fat instead of hydrous wool-fat (containing 30 per cent. water) is used, and the water, necessary to convert the anhydrous into hydrous wool-fat, is poured upon the mercuric salt and allowed to stand 24 hours. After this the salt may be incorporated with the anhydrous base, when it will form an ointment in which a strong lens would be required to detect the mercurial compound. Regarding

Unguentum Phenolis, U. S. P., VIII, it is the author's experience that the public demand is for a stronger ointment. He also considers the ointment insufficient in consistence, and suggests the addition of from 5 to 10 per cent. of paraffin to the white petrolatum which constitutes the base of the 1900 ointment.—Drugg. Circ., May, 1906, 159 and 160.

Ung. Hydrargyri Precipitati Albi—Preparation from the Freshly Precipitated Salt.—H. Morstatt recommends for the preparation of white precipitate ointment a process which, analogous to that of preparing yellow mercuric oxide ointment, depends on the use of freshly prepared white precipitate, obtained from the calculated quantity of mercuric chloride. Furthermore, he finds it quite practicable to prepare a concentrated ointment, containing 40 per cent. of white precipitate in impalpable condition, which keeps well if made according to the following formula: White precipitate (freshly prepared), 40 parts; water, 20 parts; wool-fat, 20 parts; vaseline, 20 parts. If 1 part of this is mixed with 3 parts of paraffin ointment, a preparation is obtained which corresponds with the official (G. P.) ointment in all respects, except that it contains 5 per cent. of wool-fat and 5 per cent. of water, but has the advantage of containing the medicament in an absolutely impalpable condition.—Apoth. Ztg., xxi, No. 20 (1906), 194.

Ointment of Red Mercuric Oxide—Formula for a Stable Preparation.—Otto Raubenheimer, after experimenting to determine a formula and method for preparing a stable ointment of red mercuric oxide, recommends the following as being quite satisfactory: Triturate 10 Gm. of red mercuric oxide, in very fine powder, with 5 Gm. of castor oil until a perfectly smooth mixture results, then gradually incorporate 85 Gm. of petrolatum and mix thoroughly, using a glass mortar, and avoiding the use of a metallic spatula, both during preparation and subsequently. Place the finished ointment in a jar, smooth the surface with a horn or rubber spatula, and cover it with about an inch of water. This preserves the ointment admirably, sample in use for dispensing during a whole year, showing not the slightest change.—Amer. Drugg., Oct. 9, 1905, 200.

Ointment of Yellow Mercuric Oxide—Practical Method of Preparation.—Prof. J. W. Sturmer objects to the use of moist yellow mercuric oxide for the preparation of the ointment on the ground that the presence of water greatly favors the reduction of the mercuric to mercurous oxide. He has found a method suggested in a European publication to secure an equally smooth and satisfactory product and to possess the further advantage that a stronger ointment may be kept in stock for dilution. The yellow mercuric oxide is prepared by precipitation as usual and, after washing with water, is washed with alcohol and then with ether. The latter is drained off well, but before it has a chance to dry and the particles to harden, it is mixed with enough petrolatum to make a 50 per cent. stock ointment, which may be reduced as required for a prescription.—Proc. Indiana Pharm. Assoc., 1905, 23.

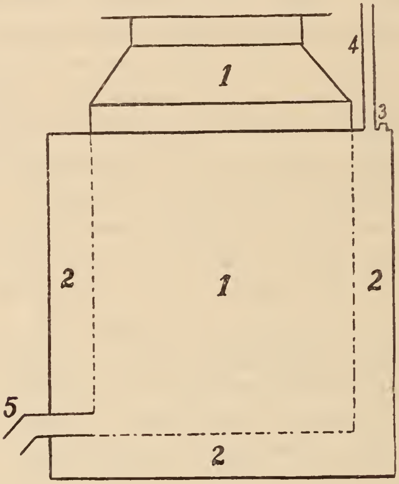
Iodine Ointments.—Preparation with a New Compound of Iodine and Oleic Acid.—A. Blanchi recommends a new material for making ointments of iodine, which he has named

Iodoleate.—It is obtained by shaking 1 p. of iodine, in alcoholic solution, with 3 p. of pure oleic acid, evaporating the alcohol slowly, and heating the product in a closed flask for several hours to 100° C. It may then be incorporated with the requisite quantity of petrolatum or any other ointment base. Iodoleate is a dense, dark-green substance, soluble in alcohol, ether, chloroform, fixed oils and petrolatum.—Pharm. Ztg., l, No. 87 (1905), 919; from Boll. Chim. Farm., 1905, No. 16.

Unguentum Kalii Iodati, G. P. IV.—Modification of Manipulation.—"Y. Z." recommends a modification of the official (G. P.) directions for preparing potassium iodide ointment, which consists in first incorporating the solution of potassium iodide (20 p.) with the lard (165 p.), and then the solution of sodium thiosulphate (0.25 p.) in water (15 p.). The reverse of this manipulation, which is now directed, leads to unsatisfactory results.—Pharm. Ztg., l, No. 75 (1905), 793.

Toilet Cold Cream—Commercial Formula and Process.—Prof. Geo. D. Oglesby recommends the following formula for the commercial production of a cold cream, which, while not suitable as a substitute for the official ointment of rose water, produces a very satisfactory article for the toilet, practically identical with the cold creams which are usually supplied to druggists at about three times the price. The ingredients are: White wax, 100; white petrolatum oil, 500; water, 200; borax, 4; perfume (oil of rose), to suit. Much depends, however, how these ingredients are mixed, and the author therefore describes the vessel in which this may be most satisfactorily effected. This is shown by Fig. 46 to consist of an inner vessel (1.1), with an outlet (5) at the bottom for the withdrawal of the product while still warm and in condition of a thick creamy fluid, and an outer vessel (2, 2, 2) forming a steam jacket, into which water is poured through the tube on top (3, 4), enough to well cover the bottom. Heat

FIG. 46.



having been applied to the bottom, put the wax inside, and, when melted, add the oil. When wax and oil become a transparent solution, but not hot enough to be uncomfortable to the hand, pour in all at once the water previously heated to the same temperature and in which the borax was dissolved; the essential requirement in manipulation is to have the wax and oil solution and the borax and water solution of the same temperature and not too hot. When water is added all at once, add perfume, stir rapidly, just long enough to thoroughly mix, and no longer. The cream may then be drawn off into "patch-boxes," collapsible tubes, or other containers, as may be deemed best. It is white, smooth and creamy to the touch, will keep well, and is cheap.—Pharm. Era, June 14, 1906, 578–579.

Zinc Ointment—Expeditious and Efficient Manipulation.—Paul Caldwell recommends the following manipulation for the expeditious and satisfactory preparation of zinc ointment: Melt two-thirds of the lard required, but before this portion of the lard is melted put in the zinc, and heat for three or four minutes after the portion is melted, care being taken not to get this mixture too hot as the zinc may be discolored. Now run the melted ointment through a No. 60 sieve into a suitable dish immersed in ice-water. Hold the remainder of the lard over the fire until it is quite hot, but not scorched, and pass this through the sieve into the first portion of the ointment. Stir the two portions together until the ointment is cool or thick enough to support the zinc, scraping down the hardened parts which adhere to the side of the vessel during the stirring.—Drugg. Circ., July, 1905, 220.

VINA.

Vinum Colchici Seminis, U. S. P. VIII—Modification of Formula.—Paul Caldwell advises the use of detannated wine, fortified by an additional 12½ per cent. of alcohol for making wine of colchicum seed. This prevents the precipitation of alkaloid and secures a permanently clear product. He thinks that

Vinum Rhei, N. F. Appendix, which is nearly obsolete, has probably become so because of the unsightly product obtained by following the official formula. A great improvement would be made, in his opinion, by discarding the recognized formula and substituting this one: Fluidextract of rhubarb, 100 Cc.; oil of calamus, 10 Cc.; potassium carbonate, 4 Gm.; wine, enough to make 1000 Cc. This makes a clear and permanent preparation.—Drugg. Circ., May, 1906, 160.

Wine of Glycerophosphates—Formula.—H. A. B. Dunning suggests the preparation of wine of glycerophosphates on the lines recommended in his "modified" formula for compound elixir of glycerophosphates (which see under "Elixiria"), as follows:

Calcium glycerophosphate	64 gr.
Sodium glycerophosphate	64 gr.
Glycerin	4 oz.
Water	4 oz.
Lactic acid	30 Mm.
Sherry wine, sufficient to make	1 pt.

Rub the calcium glycerophosphate to a smooth paste with one ounce of glycerin, add 3 ounces of water and then the lactic acid. Dissolve the sodium glycerophosphate in 1 ounce of water by heat. Mix the two solutions, add the glycerin and finally the sherry wine. Filter.—Bull. Pharm., June, 1906, 246.

Wine of Glycerophosphates—Formula.—Reginald Edgar Dyer recommends the following formula for a wine of glycerophosphates:

Calcium glycerophosphate	40 grains.
Sodium glycerophosphate	20 grains.
Potassium glycerophosphate	20 grains.
Port wine	1 pint.

Dissolve the salts in the wine.—Pract. Drugg., Dec., 1905, 265.

Wine of Pepsin—Clarification with Milk.—Schirmer recommends the addition of about 3 Cc. of milk to 1000 Cc. of pepsin wine to facilitate its clarification. The precipitate of casein, produced by the acids of the wine, is allowed to settle for about an hour, and the wine may then be filtered, becoming invariably bright and clear.—Pharm. Ztg., l, No. 92 (1905), 972.

Tamarind Wine—Preparation.—Frz. Adam recommends the following process for making tamarind wine: 150 Gm. of tamarinds are boiled with about 2500 Gm. of water, 450 Gm. of sugar added to the decoction, and sufficient water to make 3000 Cc. Pure wine-yeast cultures are then added, and the liquor is fermented in the usual manner until all the sugar is consumed—this requiring about three weeks. The wine is then mixed with kieselgur and filtered. So obtained, tamarind wine is a clear, dark yellow, strongly acidulous liquid, having an odor and taste resembling cider, but no characteristic aroma.—Pharm. Ztg., l, No. 71 (1905), 753; from Ztschr. d. Oesterr. Apoth., v, 1905, No. 34.

MISCELLANEOUS FORMULAS.

Veterinary Remedies—Approved Formulas.—H. C. Bradford publishes the following formulas which he has found to be quite useful in veterinary practice for the treatment of ailments indicated by their titles:

Condition Powder.—Fenugreek, sulphur, resin, flaxseed meal, Epsom salts, of each, 5 parts; ginger, gentian, copperas, sodium bicarbonate, of each, 4 parts; black antimony, sodium chloride, of each, 2 parts; potass.

nitrate, 1 part. All to be finely powdered and then well mixed. Ordinary dose, a tablespoonful once or twice a day.

Liniment.—Camphor, tinct. iodine, of each, ½ oz.; tinct. capsicum, arom. spir. ammon., tinct. opium, of each, 1 oz.; oil of turpentine, 4 ozs.; alcohol, enough to make 32 ozs. Mix, adding the oil of turpentine last of all. This is a good counter-irritant liniment, useful for sprains, stiffness, sore muscles, sweeny, etc.

Healing Oil.—Crude carbolic acid, pine tar, oil of spike, of each, 4 ozs.; cheap lubricating oil (the best is the heavy, stiff, cheap "black oil," although any other will do), enough to make ½ gallon. This makes a good "healing oil" for barbed wire cuts and other wounds, for which purpose, however, the product obtained by the following formula may be used, with the further advantage of being disinfectant and a good insecticide: Camphor, 1 oz.; phenol, ½ oz.; linseed oil, enough to make 16 ozs. In using either of these, it is only necessary to wet the wounds liberally, taking care that it reaches well to the bottom.

Gall Cure (*Ointment*).—Zinc oxide, burnt alum, camphor, of each, 1 oz.; phenol, calomel, of each, ½ oz.; bismuth subgallate, ¼ oz.; benzoinated lard, 4 ozs.; petrolatum, 12 ozs. Mix the dry powder, and reduce them to smooth parts with a solution of the camphor in the phenol, using, if necessary, a little castor-oil to make a perfectly smooth paste. Then incorporate the lard and petrolatum. In warm weather 2 ozs. of the petrolatum should be replaced by wax.

Gall Cure (*Powder*).—Zinc oxide, calomel, bismuth subgallate, of each, 1 oz.; burnt alum, 4 ozs.; boric acid, 16 ozs.; acetanilide, 1 oz. All in very fine powder. Mix well (in the order named? Rep.) and sift. This powder is not only excellent for galls, but is also a most excellent dry dressing for wounds on man or beast.

Colic Drench.—Tincture of opium, tincture of ginger, spirit of nitre, chloroform, of each, 1 oz. Mix. This is a full dose for a horse. If the animal is small, or the case a light one, half of it may suffice, to be followed by the other half, if necessary, in thirty minutes.—Merck's Rep., April, 1906, 97.

Perborate (*Oxygen*) *Toilet Preparations — Formulas.*— Richard von Foregger recommends the following formulas for toilet preparations containing sodium perborate (which see under "Inorganic Chemistry" as an active ingredient:

Perborate Talcum Powder: Talc, 94 p.; sodium perborate, 5 p.; violet (Trol-D), 1 p. Mix. This is not to be considered an active skin-bleach, for which purpose the perborate must be applied in a larger proportion; but such a preparation is not recommended, since, to produce the so-called bleaching effect, the destruction of the sound skin is inevitable. The mild bleaching effect produced by the powder made according to the above formula, is due to the action of the nascent oxygen in strengthening the living tissues, not in destroying them.

Perborate Nail-Bleach may be made by placing one-half a teaspoonful of the perborate into a dish with six teaspoonfuls of lukewarm water, to form a milky liquid. This is applied to the finger-nails with a nail brush, which are then rubbed a few minutes.

Perborate Oxygenated Nail Powder is obtained by mixing: Putty powder, 30 Gm; sodium perborate, 2 Gm; carmine, 1 Gm., and perfuming the mixture. This is efficient as a polish, and also acts as a slow bleach.

Perborate (*Oxygenated*) *Hand Cleaner* is made by mixing together the following ingredients: Castile soap, finely powdered, 30 parts; pumice, in finest powder, 3 parts; China clay, 45 parts; sodium perborate, 22 parts.

Foot Powder, for the efficient treatment of sweaty feet, is obtained by mixing together: Sodium perborate, 15 parts; zinc peroxide, 10 parts; talc, 75 parts.—Amer. Drugg., Febr. 12, 1906, 61.

Toilet Creams—Commercial Formulas.—James Fullerton recommends formulas for cold cream and almond cream which has been thoroughly tried and have been exploited successfully in a commercial way. They are as follows:

COLD CREAM.

Liquid petrolatum (white)	1 gallon.
Yellow wax	1½ pounds.
White wax	1½ pounds.
Borax	2 ounces.
Water	28 ounces.
Perfume	enough.

This is made by a machine and is a good article which will keep. The perfume used is a mixture of the oils of rose, rose geranium and bergamot.

ALMOND CREAM.

Bitter almonds (blanched)	3 ozs. 90 grs.
Boric acid	6½ drams.
Borax	2 drams.
Castile soap (powdered)	2 ounces.
White wax	2 ounces.
Spermaceti.	2 ounces.
Expressed oil of almond	2 ounces.
Alcohol	14 ounces.
Witchhazel water	4 ounces.
Oil of bitter almond	4 drops.
Glycerin	4 ounces.
Water	enough.

Select clean almonds and beat them in a clean mortar; make an emulsion of them with 1 pint of water, and strain. Wash the quince-seed and make a mucilage of them with 1½ pints of water, adding the boric acid and borax, and strain. Dissolve the soap in 19 ounces of hot water, and strain. Heat together the wax, spermaceti and oil of almond, and when they are melted, stir in the soap solution, add the emulsion and then the mucilage. To this add the remaining ingredients, using enough water to bring the measure of the finished mixture up to 1 gallon.—Drugg. Circ., May, 1906, 162.

Almond Toilet Cream—Formula.—Albert E. Ebert recommends the following formula for an "Almond Toilet Cream:"

Tragacanth, powder	½ av. oz.
Borax	½ av. oz.
Ammonium chloride	1 av. oz.
Glycerin	10 fl. oz.
Tinct. benzoin, simple	1 fl. dr.
Oil bitter almonds	10 drops.
Water	54 fl. oz.

Triturate the gum with glycerin to a smooth paste; dissolve the borax and ammonium chloride in a portion of the water, filter this solution, mix the two liquids, add the remainder of the water and incorporate the benzoin and essential oil by agitation.—Meyer Bros. Drug., Dec., 1905, 367.

"*Alpine Cream*"—*Formula.*—Clark L. Otis has found a toilet cream prepared according to the following formula to be a very popular preparation:

Quince mucilage, U. S. P.	1 oz.
Boric acid	1 drachm.
Glycerin	1 oz.
Alcohol	6 oz.
Water	q. s. 2 pints.

Mix.

—The Apoth., Jan., 1906, 45.

Face Cream—Formula.—Gémayel recommends the following formula for a face cream: 1000 p. of white vaseline are melted with 120 p. of paraffin; 40 p. of very finely powdered borax and 40 p. of tincture of benzoin are added gradually, with stirring, and the mixture is allowed to cool without further stirring. A finely levigated mixture of 50 p. each of zinc oxide and of glycerin is then incorporated with the cooled ointment, and the whole perfumed *ad libitum.*—Pharm, Ztg., l, No. 75 (1905), 794.

Vienna Cream—Formula.—An efficient toilet cream is prepared, according to J. Arnaud, as follows: 40 Gm. of zinc oxide are finely levigated with a little oil of almond, and the paste so obtained is then mixed with a previously prepared mixture obtained by dissolving 40 Gm. of borax in 100 Gm. of lime water, adding 100 Gm. of oil of almond and shaking.

The addition of the latter to the zinc paste must be in small quantities at a time.—Pharm. Ztg., l, No. 75 (1905), 794.

Cucumber Milk—Formula.—Albert E. Ebert gives the following formula for making "cucumber milk:"

Cucumber juice	8 fl. ozs.
Oil of sweet almonds	2 fl. ozs.
Spirit of soap, N. F	2 fl. ozs.
Tincture of benzoin	1 fl. dr.
Oil of bitter almonds	1 drop.
Oil of lavender	15 drops.
Oil of bergamot	10 drops.

Mix.

Cucumber Juice is made by pouring boiling water upon sliced green cucumbers with peel on; let stand until soft and pulpy, then extract the juice by pressing and straining through muslin. To each 3½ fluidounces of the juice add ½ fluidounce of alcohol.—Meyer Bros. Drugg., Nov., 1905, 335.

Arnica and Witch-Hazel Lotion—A Popular Formula.—James Fullerton recommends the following formula for a lotion for winter use, which
(en has process quite popular and is considered by him to be an article of merit:

Arnica flowers	2 pounds.
Tragacanth	1 pound.
Quince seed	2 pounds.
Borax	6 ounces.
Boric acid	8 ounces.
Salicylic acid	8 ounces.
Alcohol	1 gallon.
Witchhazel water	1½ gallons.
Glycerin	2 gallons.
Water	enough.

Place the flowers in 4 gallons of water and bring to a boil; strain and filter. Make a mucilage of the tragacanth, quince seed and 6 gallons of water, and to this add the borax and two acids, and strain. Mix the two solutions, and bring them up to 10½ gallons by the addition of more water if necessary. Mix the alcohol, witchhazel water and glycerin, and add the mixture to the 10½ gallons of solution.—Drugg. Circ., May, 1906, 162.

Hair Tonic—Formula.—A. Schleimer gives the following formula for a hair tonic: Horseradish root, scraped, 4 oz.; add to hot water, 4 pints; let stand 24 hours, strain, and add; ammonium chloride, 1 oz.; alcohol 4 pints; oil rosemary, 4 fluidrachms.—Merck's Rep., Aug., 1905, 237.

Hair Tonic—Formula.—Frank Richardson recommends the following formula for a hair tonic which he has used for some years and has found very satisfactory to prevent the hair from falling out: Tinct. nux vomica, 1 oz.; tinct. capsicum, ½ oz.; glycerin, 2 ozs.; bay rum, sufficient to make 8 ozs. Mix. Apply as a hair dressing two or three times a week. —The Apoth., Dec., 1905, 957.

Egg Shampoo—Commercial Formula.—James Fullerton recommends the following formula for "egg" shampoo, which, put up in 6-ounce bottles, has proven a good seller:

Green soap	1½ pounds.
Potassium carbonate	4 ounces.
Alcohol	1½ pints.
Tincture of cantharides	2 ounces.
Tincture of curcuma	to color.
Oil of citronella	to perfume.
Water ... enough to make	1 gallon.

Dissolve the potassium carbonate in the water and the soap in the resultant solution, and then add the other things.—Drugg. Circ., May, 1906, 162.

Tooth Wash—Formula.—A. S. Kraemer recommends the following formula for preparing a tooth wash:

Green soap	9 drams.
Glycerin	9 drams.
Syrup, U. S. P.	4 ozs.
Soft water	26 ozs.
Alcohol	26 ozs.
Rose water	1 oz.
Oil peppermint	45 minims.
Oil wintergreen	1 dram.
Oil cloves	20 minims.
Oil cassia	15 minims.
Solution carmine	2 drams.

Dissolve the soap in hot water and add syrup, glycerin and rose water. Dissolve the oils in the alcohol and mix solution with the former one. Add the solution of carmine and filter at a very low temperature.—The Apoth., Dec., 1905, 959.

Tooth Powders—Composition as Affected by Recent Investigations in Dental Science.—Taking three prescriptions for tooth powders, an English, an American, and a German, as examples, Stanley Read discusses the conditions which determine the usefulness of dentrifices in general and their compositions in particular as affected by recent investigations in dental science. He concludes that there seems to be only one condition of the mouth in which a dentrifice may exercise some protective power over the teeth: that of acidity. But it is not possible by the use of tooth powder even three times a day to keep the mouth entirely alkaline or neutral, so that we must end by regarding tooth powders, even the best of them, as agents for removing the stains from the teeth merely for æsthetic reasons. On these lines, the last prescription that he gave was: Castile soap, ʒi; precipitated chalk, ʒi; cuttle fish bone, ʒj; powdered magnesium carbonate, ℥j; otto of rose, ♏j. The soap, to break up any greasy matter on the teeth; the chalk, the usual polishing agent; the fish-bone (to remove discoloration of the hard, strong teeth of smokers? Rep.) not to be added in the case of poor teeth or for a woman; the magnesia, as antacid.—Trans. Brit. Pharm. Conf. (Year-book of Pharm.), 1905, 385–387.

Green Toilet Ammonia—Formulas.—The following two formulas for "Green Toilet Ammonia" may serve to show how widely preparations exploited under the same name may differ from each other:

H. B. Palmer's Formula.—Ammonia water, 10 per cent., 250 Cc.; green soap, 120 Gm.; oleic acid, 10 Cc.; oil of bay, 1 Cc.; oil of rosemary, 1 Cc.; oil of verbena, 5 Cc.; water, enough to make 1000 Cc. Dissolve the soap in 500 Cc. of warm water, and when cool add the water of ammonia and the oils; mix by agitation, and add lastly the oleic acid and enough water to make 1000 Cc.

H. C. Bradford's Formula.—"*A.*" Dissolve 4 ozs. of copper sulphate in enough boiling water to make 16 ounces, and filter. "*B.*" Dissolve 2 ozs. of potassium dichromate in enough boiling water to make 16 ounces, and filter. Add of solution "*A*" to ammonia water until the latter has acquired about the same shade as the solution; then add sufficient of solution "*B*," very cautiously, until the right shade of green is produced. By measuring the quantities from pipettes or burettes, the exact amount of each that is required may be determined, and used in the ascertained proportions thereafter.—The Apoth., Mar., 1906, 212 and 213.

Æther Pini Silvestris—Formula.—The pharmaceutical district societies of Saxony have adopted the following formula: Oleum pini silvestris Sibirici, 20.0; oleum lavandulæ, 2.0; oleum lini, 5.0; alcohol absolutus, 5.0; æther petrolei, ad. 100.0.—Pharm. Ztg., li, No. 3 (1906), 30.

Catgut—Effective Sterilization.—For rendering catgut permanently sterile without impairing its surgical efficiency, the following method is recommended by J. Tairton: The catgut of commerce must first be completely deprived of grease by rubbing it briskly with a pad of absorbent cotton wool that has been steeped in ligroine. He next rolls it loosely in a single layer round small glass rods or tubes and places these in a flask of ligroine, where he leaves them for about twenty days. The rods are then taken out and exposed to the air for about twenty-four hours, or until the ligroine has evaporated. They are then placed in a 2 per cent. solution of iodine in acetone, contained in a wide-mouthed yellow flask (previously sterilized by means of boiling water) which must be kept hermetically closed. After standing for a month in a dark place, the rolls of catgut are transferred with sterilized pincers to a flask of 90° alcohol for storage until required. When first taken out of the iodo-acetone the catgut is hard and somewhat brittle, but the spirit soon removes the excess of iodine left by the evaporation of the acetone and restores flexibility.—Pharm. Journ., May 5, 1906, 525; from Arch. de Med. et de Pharm. Militaires, through Lancet, April 28, 1906, 1193.

Furniture Polish—Formula.—Frank T. Wray communicates the following formula for a cheap furniture polish: Muriatic acid, 2 fluidrachms; butter of antimony (solution), 1½ fl. ounces; alcohol, 1½ fl. ounces; linseed oil, 4 ounces; white wine vinegar, 8 fl. ounces. Mix in the order given.—Proc. Pa. Pharm. Assoc., 1905, 184.

Floor Wax—Formula for Ball Rooms.—Albert E. Ebert recommends the following formula and process for preparing a floor wax, in form of powder, which has proved excellent for dancing floors:

Paraffin, white	1 av. lb.
Talcum	19 av. lbs.

Place the talcum in a suitable metal dish, place over fire, and heat to about 300° Fahrenheit. Melt the paraffin and pour upon the heated talcum with stirring until well mixed, then pass through a coarse sieve.—Meyer Bros. Drugg., Jan., 1906, 7.

A New Label Paste—Formula.—The following formula for a label paste is given in the "American Druggist:"

Tragacanth, powdered	2 parts.
Boiling water	16 parts.

Add the water to the tragacanth, stirring vigorously the while.

In another vessel mix the following:

Cold water	4 parts.
Rye flour	6 parts.
Dextrin	1 part.

Add the paste thus made to the tragacanth paste and mix to a homogeneous mass. To the mixed paste is then added, with constant stirring, 24 parts of boiling water, and later 1 part of glycerin and one part of salicylic acid, the whole being lastly boiled three to four minutes with constant stirring.—Amer. Drugg., May 28, 1906, 287.

Paste—Formulas Suitable for Photographs.—Albert E. Ebert recommends the following formulas for preparing paste for photographs:

Corn starch	2 av. oz.
Gelatin, French	1 av. oz.
Water	16 fl. oz.
Oil of cloves	16 drops.

Soften the gelatin by letting it stand over night immersed in 6 ounces of the water. Beat up the starch with 2 ounces of the cold water and pour this mixture in 8 ounces of water that is boiling. Keep up the boiling for a few moments with brisk stirring. Now apply heat to the softened gelatin until this is in solution and add to the still warm starch paste with stirring until a uniform paste has resulted, then add the oil of cloves.

White Paste for Photographs is obtained as follows:

Dextrin, pure white	8 av. oz.
Borax	1 av. oz.
Glucose	1 av. oz.
Water	6 fl. oz.

Dissolve the borax in water by heat, then add the dextrin and glucose and continue the heat until dissolved, strain through cloth.—Meyer Bros. Drugg., July, 1905, 197.

C. NEW REMEDIES

AND TRADE-NAMED SPECIALTIES.

Abyssinin is the name given to the extract of an *Acanthera*, presumably *A. schimperi*, which is used in German East Africa as an arrow poison. It has pharmacological properties similar to those of digitalis and strophanthus preparations.—Pharm. Ztg., li, No. 30 (1906), 341; from E. Merck's Annual Report, 1905.

Acidum Amido-formicicum Condensatum is the provisional name given by J. Rosenberg to a product obtained from formic acid, the exact chemical characters remaining to be determined. The preparation is presumably a condensation product of amido-formic acid, oily in appearance, soluble in water, alcohol and acetone, but insoluble in ether, chloroform, benzol and xylol. It has a faint alkaline reaction and a somewhat bitter taste. It is claimed to possess marked antiseptic properties, being given in form of a concentrated solution containing 33 per cent., in doses of 30 to 50 drops, 3 times daily, and increasing the dose from day to day.—Pharm. Ztg., li, No. 25 (1906), 278.

Acidum Diaethylbarbituricum is the proper scientific name for "veronal" (see Proceedings, 1904, 825).

Adeps gossypii, exploited in Germany as a substitute for lard, has been subjected to examination by Dr. Aufrecht, who finds it to consist of the more solid components of cotton oil. Its sp. gr. is 0.927; m. p., 35.5°; congealing point, 31°; saponification number, 206.2; iodine number, 114.—Pharm. Ztg. li, No. 1 (1906), 10.

Æthrole is the name of an antiseptic fluid compound of eucalyptol, oil of peppermint, cologne water, etc., recommended for the disinfection of rooms by means of the nebulizer, and as a wash for disinfecting the hands, etc. It is supplied also in form of powder, to be used for similar purposes. —Pharm. Ztg., l, No. 84 (1905), 887.

Alcko is the name given by A. Gawalowski to aluminum carbonate, which he has succeeded in preparing. It is a white, tasteless powder, containing 40–45 per cent. of aluminum, and finds use both for medicinal and technical purposes. — Pharm. Ztg., l, No. 65 (1905), 686; from Pharm. Post, 1905, No. 28.

Aldol is the name given by Camurri to the aldehyde-condensation product which results when ethylaldehyde is exposed to the action of diluted hydrochloric acid for several days at 15° C. The product of the reaction is neutralized with soda, shaken out with ether, and the ether solution evaporated. The residual aldol ($CH_3CH[OH]CH_2CHO$) constitutes a thick, odorless liquid, miscible with 2 parts of water and also with alcohol or ether. It polymerizes readily, and on prolonged standing separates crystals of "paraldol." The author finds aldol to be available as a hypnotic.—Pharm. Ztg.. l, No. 69, (1905), 729; from Boll. Chim. Farm., 1905, No. 14.

Alformin is the name given to a concentrated solution of basic aluminum formate. It contains about 16 per cent. of this compound, is odorless, has superior stability, and is claimed to have from two to three times the antiseptic activity of solution of aluminum acetate. For fomentations it is diluted with 8 to 10 parts of water; 5 to 10 drops are added to a glass of water for gargles or mouth wash.—Pharm. Ztg., li, No. 49, (1906), 546.

Almatein is the name given to a condensation product of hæmatoxylin and formaldehyde, to which the following formula is attributed: CH_2O_2 :-$(C_{16}H_{12}O_5)_2 : CH_2$. It is a light, odorless and tasteless powder of a pale-red to brown-red color, is soluble in alcohol, acetic ether, acetic acid, acetone, alkalies, and particularly in glycerin, but not soluble in water. It is recommended as an antiseptic and intestinal disinfectant, which may be used externally, pure or diluted, as a dusting powder in form of glycerin solution for the treatment of wounds, and internally for the treatment of intestinal disturbances, such as dysentery, diarrhœa, etc., in dose of 0.2–0.6 Gm. —Pharm. Ztg., li, No. 30 (1906), 341; from E. Merck's Annual Report, 1905.

Alypin is the name given by its manufacturers to the primary hydrochloride of benzoyltetramethyldiaminoethyldiamethylcarbinol, which has proven to be an efficient local anæsthetic. It is a handsomely crytallized non-hygroscopic salt, melting at 169° C., and very readily soluble in water, forming neutral solutions which are not rendered turbid by moderate additions of sodium bicarbonate. The aqueous solutions may be sterilized by boiling over the direct flame during five or ten minutes, without suffering decomposition or affecting their anæsthetic activity, but more prolonged boiling is inadvisable. The 2 to 4 per cent. solutions are quite stable, but more dilute aqueous solutions are proven to become mouldy. Its anæsthetic action is fully equal to that of cocaine; indeed, being easily absorbed, its solutions are effective in dilutions in which cocaine would remain ineffective. Moreover, it is claimed to have considerably less toxicity than cocaine, to be free from mydriatic action, and to produce neither accomodation disturbances nor vaso-constrictions.—Pharm. Ztg., l, No. 59, (1905), 623.

Alypinum Nitricum has been introduced by the manufacturers of alypin, which is the name given to the monohydrochloride of benzoyltetramethyldiaminoethylisopropyl alcohol, to facilitate the use of this synthetic in combination with silver nitrate.—Pharm. Ztg., li, No. 15, (1906), 169.

Antichlorotin is the name given to a German specialty in form of pills, which are recommended for the treatment of chlorosis, and are said to contain hæmoglobin, sulphur and magnesia.—Pharm. Ztg., li, No. 25 (1906), 278.

Anticilloid is the name given to urethral pencils, recommended as a prophylactic against gonorrhœa, which are composed of cacao butter containing 10 per cent. of protargol.—Pharm. Ztg., l, No. 82 (1905), 870.

Antidiabeticum Fluidum is the name of a specialty exploited, as its name implies, as a remedy for diabetes. It is said to consist mainly of an aqueous fluidextract of *Senecio fuchsii* (97.78 per cent.), containing besides only 2 per cent. of alkalies, 0.2 per cent. of salicylic acid, and 0.02 per cent. of trypsin. The dose of this preparation is one tablespoonful.—Pharm. Ztg., l, No. 82 (1905), 870.

Antiferment Tablets, a German specialty recommended as a digestive and corrective in stomach troubles, are composed of bismuth subnitrate, rhubarb, sodium bicarbonate, magnesium carbonate, and oil of sugar of peppermint. The proportions are not mentioned.—Pharm. Ztg., li, No. 5 (1906), 54; from Therap. Monatsh., 1906, No. 1.

Antitaenin is a tapeworm remedy prepared from pumpkin seeds in form of tablets.

Apicin is the name given to a remedy recommended for the treatment of affections of the air-passages, which contains calcium phosphoro-guaiacolate as active constituent.—Pharm. Ztg., l, No. 104 (1905), 1098.

Arhovin, a specialty claimed by its exploiters to be a liquid compound of diphenylamine and thymylbenzoicacidethylester, having the sp. gr. 1.055 and boiling at 218° C., has been examined by O. Anselmino, who finds it to begin to boil at 213° C., the thermometer rising slowly to 235° C., and then rapidly to above 300° C. The author does not regard it to be a chemical compound, but simply a mixture of thymol, benzoicacidethylester and diphenylamine. It retains its liquidity at −15° C.—Pharm. Ztg., l, No. 60 (1905), 635; from Ber. d. D. Pharm. Ges., 1905, No. 6.

Arnidiol—A New Alcohol from Arnica Flowers.—In a previous communication T. Klobb described a new phytosterin which he had isolated from the flowers of *Arnica montana*, and had named *arnisterin*. Continued investigations, however, have demonstrated that, although the new body is an alcohol, it cannot be regarded a phytosterin because it contains two OH groups. He therefore proposes the name "arnidiol" in place of "arnisterin," previously proposed. A comprehensive description of the new alcohol, of its preparation and character, is given in the original paper, in Bull. d. Sc. Pharm. (1905, No. 9).—Pharm. Ztg., l, No. 80 (1905), 846.

Arsenferratose is the name given to a solution of ferratin (artificial ferrialbuminic acid) containing arsenic in combination, and forming a stable and agreeable medicament. It contains 0.3 per cent. of iron and 0.003 per cent. of arsenic, and is recommended in doses of a tablespoonful thrice daily as an efficient ferro-arsenic tonic.—Pharm. Ztg., li, No. 16 (1906), 180.

Arsanol is the new name for a specialty which has heretofore been exploited under the name of "Pilocarpinum Comp." (See Proceedings 1905).—Pharm. Ztg., l, No. 96 (1905), 1010.

Astmol is the name given to a powder recommended for the relief of asthma, which is stated to be composed of fol. stramonii, 40.0; herb. grindeliæ robust., 10.0; bolet. laricis, 10.0; menthol, 3.0; potassium nitrate, sodium nitrate, of each, 20.0. It is used by inhaling the smoke produced when the powder is ignited.—Pharm. Ztg., l, No. 87 (1905), 921.

Belloform is the name given to a specialty which is described as a condensation product of high-boiling hydrocarbons, deficient in cresol, with formaldehyde, held in solution by the aid of soap. The liquid is miscible with water and alcohol, and is claimed to have the same activity as creolin and lysoform.—Allg. Mend. Zentr.-Ztg., 1906, 158.

Benzosalin is the name given to the methylester of benzoylsalicylicacid. It has the composition represented by the formula, $C_6H_4.O.COC_6H_5.COOCH_3$, melts at 82° C., is insoluble in water, but readily soluble in alcohol and in ether. Its taste is similar to that of benzoic acid. Pharmacologically it is analogous to acetylsalicylic acid, and is recommended as an anti-rheumatic and anti-neuralgic in doses of 1 Gm. several times daily.—Med. Klin., 1906, 138.

Benzoyl superoxide, $C_6H_5.CO.O.O.CO.C_6H_5$, is a new disinfectant agent having mild local anæsthetic properties, but claimed to be indifferent in action when taken internally. It is obtained by treating 100 Gm. of commercial sodium peroxide with 180 Gm. of benzoyl chloride in water at a temperature of 4° C., removing the product of the reaction by filtration, and crystallizing it from alcohol, the yield being 60 to 70 per cent. It forms handsome, white, odorless prisms, melting at 103.5° C., which are very sparingly soluble in water, more soluble in alcohol, and readily forming 2 to 3 per cent. solutions with olive oil. Its relation to hydrogen dioxide is evident, but it is distinguished from this in its action by not being decomposed by cellular tissues or blood with formation of gaseous oxygen, while, on the other hand, it is claimed to be a more energetic oxidizing agent on many substances. It is recommended as a wound antiseptic and for the treatment of various skin diseases in the form of powder, solution in olive oil, and in 10 per cent. salve made with a mixture of vaselin and lanolin in equal parts.—Pharm. Ztg., l, No. 65 (1905), 686; from Therap. Monatsh., 1905, No. 8.

Biosan Milk is an Austrian specialty recommended as an adjuvant to cover the unpleasant taste of medicines, prepared by admixture of milk (in proportions not stated) and

Biosan Syrup, which is used for the same purpose. This syrup is compounded with oak-bark, chamomile, linden flowers, peppermint herb, licorice root, gentian root, anise and sugar, with addition of small quantities of phosphoric acid.—Pharm. Ztg., l, No. 52 (1905), 552.

Blenal is the name given to an antigonorrhoic, which is said to be composed of santalol carbonate.—Pharm. Ztg., li, No. 43 (1906), 481.

Blennorsan is the name given to a specialty hitherto exploited under the name "Gonorylum." It is supplied in form of tablets, which are said to contain 33 per cent. of a fluidextract of ranjan (*Ixora coccinea*) as active constituent, and is recommended for the treatment of gonorrhœa. —Pharm. Ztg., li, No. 15 (1906), 169.

Brasant Capsules is the name given to specially-prepared gelatin capsules which, it is claimed, are filled with the best East Indian santal oil and hardened. They do not dissolve until they reach the intestinal tract. —Pharm. Ztg., li, No. 39 (1906), 438.

Brometon is the trade name given to tribrombutyl alcohol, $C_4H_7OBr_3$. It is supplied in form of a white, crystalline powder, having a camphor-like odor and taste, and is recommended for insomnia, epilepsy and other forms of nervous diseases in doses of 0.3 to 0.6 Gm.

Bromotan is the name given to bromtannin-methylen-urea, which is supplied in form of a light-brown, odorless and tasteless powder, and is recommended, in the form of 10 per cent. dusting powder or 10 per cent. ointment, for the treatment of nettlerash, itching and other exanthematic diseases.—Pharm. Centralh., xlvi, No. 40 (1905), 775.

Bronchitin is a Swiss specialty containing a compound extract of thyme and potassium guaiacol sulphonate, which is recommended in coughs, bronchial catarrh and bronchitis in doses of 1 to 3 teaspoonfuls to children, 3 to 5 teaspoonfuls to adults.—Pharm. Ztg., l, No. 58 (1905), 613.

Butipyrinum is identical with "Trigemin" (see Proceedings 1904, 633), a compound of "Pyramidon" (see Proceedings 1898, 1078) with butylchloralhydrate.—Pharm. Ztg., l, No. 91 (1905), 962.

Candol is the name given to a malt extract, which is claimed to excel in purity as well as in diastase content. It is supplied both in dry (crystalline) and thick liquid form.—Pharm. Ztg., l, No. 91 (1905), 962.

Capsulæ Olei Olivarum Aceticæ, "Hell," is a specialty recommended for the convenient administration of olive oil in the treatment of ulcus ventriculi and hyperacidity of the gastric juice. They consist of gelatin capsules sterilized with an antiseptic, each containing 3 or 5 Gm. olive oil. —Wien. Med. Wschr.,1905, No. 21.

Caroheat is the name given to a specialty recommended as a cough remedy, which is claimed to be the fruit juice of the honey-carobe (St. John's bread).—Pharm. Ztg., l, No. 99 (1905), 1045.

Cascoferrin is the name given to a bitterless preparation of *Rhamnus purshiana* containing "triferrin" (see Proceedings 1901, 645), which is exploited as tonic laxative.—Pharm. Ztg., li, No. 16 (1906), 180.

Cellaton Watte is the name given to a bandaging material composed of absorbent cotton, several layers of cellular tissue, and a protective covering of gauze.—Pharm Ztg., l, No. 58 (1905), 613.

Ceratum Odontalgicum is the name given to a specialty composed of white wax, chloralhydrate, camphor and thymol, recommended in toothache, cotton, impregnated with the previously melted or dissolved mass, being inserted into the cavity of the decayed tooth.—Pharm. Ztg., l, No. 52 (1905), 552.

Ceratum Vaselini is a Dutch specialty, said to be composed of 5 parts of yellow or white wax and 95 parts of yellow or white vaseline, and claimed to be capable of taking up, similarly to adeps lanæ, 75 per cent. of its weight of water.—Pharm. Weekbl., 1905, No. 24.

Cerolin Suppositories are prepared either with an oil of theobroma or gelatin mass containing 5 per cent. of ceroïin, and are intended for the treatment of vaginal and cervical leucorrhœa.—Pharm. Ztg., li, No. 45 (1906), 503.

Chininphytin is a quinine compound obtained by neutralizing anhydro-oxymethylen-phosphoric acid (which has been introduced under the name of "phytin") with quinine, and evaporating the solution to dryness in a vacuum. It is supplied in the form of a yellowish powder, having a crystalline appearance and a bitter taste. It is easily soluble in water. producing a fluorescent solution, but is insoluble in alcohol, ether, benzol and chloroform. Recommended as a substitute for quinine salts in doses of 0.5 Gm. to adults.—Pharm. Ztg., li, No. 13 (1906), 146.

Chinoform is the trade-name given to quinine formate (which see under "Organic Bases"). The same name having previously been given to a condensation product of cinchotannic acid and formaldehyde, the two substances are likely to be confounded with each other.—Pharm. Ztg., li, No. 39 (1906), 438.

Chloroformium gelatinosum, recommended for external application by massage, is said to be obtained by mixing equal parts of chloroform and fresh egg-albumen in a close flask at a temperature of a water-bath.—Pharm. Ztg., li, No. 20 (1906), 227; from Ztschr. d. Osterr. Ap.-V.

Ciba is the name given to a creosote carbonate which is said to have the advantage over creosotal in being much cheaper.

Circulotablets is the name given to a specialty in form of tablets, exploited as a remedy for ailments affecting the general circulation. Each tablet contains 0.000125 Gm. of calomel.—Pharm. Ztg., l, No. 96 (1905), 1010.

Clasin is the name given by E. Vahlen to a new ergot preparation which is exploited as being an energetic parturient without producing ergotism or spasms. It is soluble in water, from which it is obtainable as a microcrystalline powder, while from diluted alcohol it crystallizes in prisms, having the empircal formula $C_{11}H_{22}N_2O_4$. It is insoluble in the other organic solvents, is quite stable in the dry state, but its aqueous solution becomes turbid and malodorous on prolonged standing. With the exception of its pronounced action in promoting labor, it is almost devoid of therapeutic activity, and may therefore be administered subcutaneously with perfect safety. It is supplied in powder and also in form of tablets prepared with sugar for administration *per os*, and with sodium chloride for hypodermic use.—Pharm. Ztg., l, No. 65 (1905). 686; from D. Med. Wschr., 1905, No. 32.

Codrenin is the name given to a solution contining 0.02 Gm. of cocaine hydrochloride and 0.00006 Gm. adrenalin in 1 Cc., and is recommended by its American manfacturers as a local anæsthetic and hæmostatic which is particularly useful in dental practice.

Coniferol Tablets are preparations for the bath, each tablet containing a sufficient quantity of solid extract of pine needles for a full bath.—Pharm. Ztg., li, No. 25 (1906), 278.

Cornutinum Concentr. "*Schaefer*," is the name given to a specialty which is claimed to be a solution of the nearly pure alkaloid of ergot, "with specific ergotic acid and little extractive matter." All the acrid constituents of ergot, the soft resins, neutral principles, resin acids and ferments, are eliminated. The preparation contains a definite quantity of cornutine, and therefore possesses uniform and reliable activity, its effects being manifested within half an hour after administration. The dose is 2 Gm. (one-half teaspoonful), repeated every 10 minutes.—Pharm. Ztg., li, No. 20 (1906), 227.

Corosuccin is the name given to a wound antiseptic in form of a solution containing 0.05 Gm. of mercuric chloride and 25 Gm. of succinic acid (= 2.5 per cent.) in a liter. The preparation is claimed to be quite as effective in its antiseptic action as 2 per cent. solution of pure mercuric chloride.—Pharm. Ztg., li, No. 33 (1906), 374; from Journ. de Pharm. et. Chim., 1906, xxiii, No. 8.

Creolin-Liniment is described as an oxygenated mineral oil containing 7½ per cent. of creolin.

Degrasin is the name given to a highly concentrated preparation of the thyroid gland, which is claimed to be prepared with particular precaution to avoid secondary decomposition of the crude gland. It is supplied in form of tablets and is recommended particularly as an antifat in cases in which a reduction of the accustomed quantity of food is undesirable.—Pharm. Ztg., li, No. 43 (1906), 481.

Diabeteserine is the name given to a combination of eserine salicylate (0.07 per cent.) and "Trunececk's serum." The latter is recommended by itself as being efficient in arteriosclerosis; in its combination with eserine it is particularly designed and recommended to relieve torpidity of the liver in cases of diabetes, to promote metabolism, and to strengthen normal circulation. It is supplied in tablets under two numbers, I and II. Two tablets of *Diabeteserine I* contain 0.0005 Gm. eserine and salt corresponding to 100 Cc. of blood serum. *Diabeteserine II* contains, in addition to the eserine salicylate, 0.0118 per cent. of atropine, or 0.0001 Gm. in two tablets.—Pharm. Ztg., li, No. 5 (1906), 54; from Mediz. Klinik, 1905, Nos. 55, 56.

Dijozosalts are the salts of di-iodparaphenolsulphonic acid, and therefore analogous to the so-called sozoiodol salts.—Pharm. Ztg., li, No. 45 (1906), 503.

Dispnonia Tablets, recommended for the relief of asthmatic affections, are stated to be composed of 0.25 diuretin, 0.10 agurin, and 0.10 extract of quebracho in each tablet, two being a dose.—Med. Tech. Germ., 1905, No.6; from Pharm. Ztg., l, No. 65 (1905), 687.

Duroform is a salve pencil, said to contain 33⅓ per cent. of formaldehyde, recommended for sweating hands and feet and for foot-sores.—Pharm. Ztg., li, No. 45 (1906), 503.

Estoral is the trade name given to the menthol ester of boric acid, $B(C_{10}H_{19}O)_3$. It is a white, crystalline powder, tasteless and only faintly odorous of menthol; stable in the dry condition, but rapidly decomposed in contact with mucous membranes into its components, which thus become effective in *statu nascendi*. According to O. Seifert the preparation is perfectly innocuous, and has been used with advantage as a snuff in mild and acute rhinitis, as well as for the relief of rhinitis sicca.—Pharm. Ztg., li, No. 27 (1906), 313; from Heilm.-Rev., 1906, No. 2.

Eucalyptine is the name given to a clear, dark-green, oily extract of the leaves of *Eucalyptus globulus,* containing also some guaiacol and iodoform, which is recommended for subcutaneous use in various infectious diseases (influenza, erysipelas, tussis, etc.). Münch. Med. Wschr., 1906, No. 11.

Eucathymin is the name of a specialty recommended for the relief of whooping cough, which is said to contain the active constituents of *Thymus vulgaris, Thymus serpyllum* and *Eucalyptus globulus* in concentrated form.—Pharm. Ztg., li, No. 25 (1906), 278.

Eucodin (Codeine brom-methylate), is described as occurring in colorless crystals, readily soluble in water, and as possessing the full narcotic power of codeine without its spasmodic effect. It is given in doses of 0.02 to 0.03 Gm. to relieve the inclination to cough in phthisis.—Therap. Monatsh., 1905, No. 7.

Euferin is the name given to a compound syrup of thyme, the composition of which is not available.

Euhæmose is the name given to a nutrient and tonic remedy which is described as being pure blood albumen converted into hæmocarbon, and is said to contain, besides phosphoric acid in organic combination, presumably lecithin phosphoric acid, iron and 34 per cent. of nitrogenous substance. The preparation is devoid of glycerin, sugar and foreign chemical substances, and may be administered by itself or with milk and other foods.—Pharm. Ztg., li, No. 39 (1906), 438.

Eusemin, mentioned in last year's report (see Proceedings, 1905, 534) as a local anæsthetic for dental use, contains in 100 Gm. of physiological salt solution, 5 Gm. adrenalin solution (1 : 1000) and 0.75 Gm. cocaine hydrochloride. It is supplied in sterilized tubes.—Pharm. Ztg., l, No. 80 (1905), 846.

Eusulfin-Soap is a saponaceous specialty which when used like ordinary soap generates hydrogen sulphide, and is recommended for the treatment of skin affections of every description.—Pharm. Ztg., li, No. 45 (1906), 503.

Eutannin, a specialty which has been described as being closely related to tannin (See Proceedings 1905, 535) has been identified by Thoms to be well-known *chebulinic acid,* $C_{28}H_{20}O_{19}$, which is obtained from myrobalanes. —Pharm. Ztg., li, No. 39 (1906), 438; from Ztschr. f. angew. Chem., 1906, No. 18.

Eutonicin is the name given to a hæmatinic and stomachic specialty, which is also designated as elixir condurango comp. ferratum.—Pharm. Ztg., li, No. 29 (1906), 336.

Eutonicin is said to be prepared by macerating condurango bark by a particular method and evaporating the strained fluid to the consistence of a thick extract. The dregs are then mixed with cinchona, gentian, rhubarb and orange peel, and extracted by percolation; the condurango extract is dissolved in the fluidextract so obtained, aromatics and sugar being added to flavor and sweeten. Besides these, the finished preparation is said to contain 0.6 per cent. of iron, in easily assimilable form, 0.1 per cent. of manganese, and peptone. It is given in doses of 20–30 drops.—*Ibid.*, No. 30, 343.

Fagacid is the name given to a specialty prepared, according to a German patent, by gradually heating beechwood tar to 120°–150°, and subjecting it to the action of air, or ozonized air, until the mass becomes soluble in dilute alkaline solution. The resulting product is a black, brittle solid, having an agreeable tar-odor, and the character of an acid, resembling in its chemical and physical relations ordinary colophonium.—Pharm. Ztg., l, No. 82 (1905), 870.

Fer-Protylin is the name of a Swiss iron compound which is claimed to contain 2.6 per cent. of phosphorus and 2.3 per cent. of iron in organic combination with albumen. It is supplied in form of a yellowish white, odorless and tasteless powder, and is soluble in alkaline fluids.—Pharm. Ztg., li. No. 45 (1906), 503.

Feronia is the name given to a kind of bread containing iron.—Pharm. Ztg., l, No. 65 (1905), 687.

Ferromanganin is the name given to a German specialty which is claimed to contain 0.5 per cent. of iron and 0.1 per cent. of manganese, combined with sugar, in a vehicle composed of 18 per cent. of sugar, 15 per cent. of cognac, some aromatics, and water sufficient to make 100 parts.—Pharm. Ztg., li, No. 15 (1906), 170.

Festoform (*Solid Formaldehyde*) is the name given to a specialty obtained by the admixture of 3 parts of formaldehyde solution and 1 part of soda soap, or by passing gaseous formaldehyde into a solution of soda soap (see also *Solid Formaldehyde Solutions*, under "Organic Chemistry"). It is obtained a white mass, soluble in water, forming a faintly opalescent, neutral solution, and is recommended for the disinfection of wounds and as a general disinfectant, being supplied in the form of faintly perfumed tablets and pastilles, as smelling salts, and as "creme" for the treatment of skin affections.—Südd. Apoth.-Ztg., 1906, No. 21.

Formysol is the name given to a liquid glycerin—potash soap containing formaldehyde, which is supplied in two strengths, the one containing 4 per cent., the other 10 per cent. of formaldehyde. The preparations are recommended for the disinfection of the hands and instruments after operations, and also as wound-disinfectants and for the treatment of parasitic skin diseases.—Pharm. Ztg., l, No. 67 (1905), 706; from Ztschr. f. Med.-Beamte, 1905, No. 16.

Fortose is the name given to a hemialbumose prepared from meat, which is recommended as an easily digestible and effective nutrient and tonic. It is supplied in form of a nearly odorless and tasteless white powder, readily soluble in aqueous media, and claimed to contain 85.93 per cent. of organic substance (representing 7.918 per cent. of nitrogen), 7.33 per cent. of mineral matter, and 6.34 per cent. of water. It is given in daily doses of 1 to 3 teaspoonfuls, in milk, meat broth, etc.—Pharm. Ztg., li, No. 25 (1906), 278.

Gadose is the name given to a fat, freed from fatty acids and saponaceous and ash constituents, which is derived from cod-liver oil, and has a composition similar to wool-fat. It is a yellow, ointment-like mass, beginning to melt at 33.5° C., and becoming completely liquified at 36° C., sparingly soluble in alcohol, but readily dissolved by ether, chloroform and carbon disulphide, and has the following constants: v. Hubl's iodine number, 89.67; saponification number, 167.0; acid number, 0. The fat is characterized by ready absorption, rendering the toughest skin soft and elastic, and by being miscible, like wool-fat, with a large quantity—up to 250 per cent.—of water. It is supplied in the anhydrous form as *Gadose anhydrica*, as *Gadose aquosa* containing 25 per cent. of water, and as *Gadose glycerinata* containing 25 per cent. of glycerin. The anhydrous form is recommended particularly as a basis for citrine ointment.—Pharm. Ztg., li, No. 40 (1906), 449.

Gasterogen is the name given to a specialty recommended to promote appetite and assist digestion, which is prepared from the gastric fluids of dogs. It is supplied also with additions of 5 per cent. of rhubarb root, or 5 per cent. of cinchona bark, or 10 per cent. of condurango.—Pharm. Ztg., l, No. 85 (1905), 899

Gaudamin is the name given to a sterilized solution of Para-rubber in benzin and ether, which is recommended as a covering of surfaces to be operated upon and is applied by the aid of a special apparatus. On drying a colorless protective coating of rubber is produced, which is dusted over with sterilized talc to overcome its stickyness.—Pharm. Ztg., li, No. 36 (1906), 405; from D. Med. Wschr., 1906, No. 15.

Gouttinum is the name given to a gout remedy which is said to be composed of sodium anhydromethylencitrate,—Pharm. Ztg., l, No. 91 (1905), 962.

Gynochrysma Hydrargyri is the trade name given to a 33⅓ per cent. mercurial ointment, having a basis of gynocardia oil, cod-liver oil, and glycerin soap solution, recommended on the ground of its superior absorbability.—Wien. Klin. Wschr., 1903, No. 31.

Hæmatonicum is the name given to "Liquor Ferro-Mangani Saccharati," containing 0.25 per cent. of iron and 0.05 per cent. of manganese, with aromatics.—Pharm. Ztg., l, No. 65 (1905), 687.

Hæmostan is the name given to a hæmostatic specialty which is said to be composed of the fluidextracts of hydrastis, witch-hazel and cotton root bark, with some quinine, and formed into tablets with the addition of powdered hydrastis.—Pharm. Ztg., l, No. 96 (1905), 1010.

Hæmostasin is the name given to a Swiss preparation obtained from the suprarenal gland, which is said to be identical with adrenalin, and is supplied both in the dry form (powder) and in solution (1 : 1000).—Pharm. Centralh., xlvii, No. 44 (1905), 855.

Herbacol is the name given to "Herbahuys Lime-Iron Syrup" to which 7 per cent. of potassium sulphoguaiacolate is added.

Herbahuys Lime-Iron Syrup is prepared according to the following formula: Herb. centaur. min., rad. calam., fruct. aur. immat., āā 40.0; flor. papav. rhœad., 20.0; coccionell., 10.0; kali carb., 0.6, and aluminis, 0.4, are macerated with aqua dest. 2000.0 and spir. vini 200.0 for 24 hours, strained, filtered, and after the addition of calc. hypophosphor. 50.0, ferri citric. 20.0, acid phosphor., and sacch. 3 Kgm., boiled to a syrup.—Pharm. Ztg., li, Nos. 44 and 45 (1906), 493 and 503.

Herniol is the name given to a specialty prepared from the herb of *Herniaria glabra* and the leaves of arctostaphylos uva ursi, which is recommended in doses of 20 to 30 drops, thrice daily, for the treatment of renal diseases and in catarrhal affections of the bladder.—Pharm. Ztg., li, No. 27 (1906), 313.

Ichthyomethol is the name given to a specialty, recommended for rheumatic neuralgia, muscular pains, neuralgic headaches, etc., which is said to be composed of ichthyol, menthol, menthol-salicylate, volatile oils and alcohol.—Wien. Med. Pr., 1905, No. 43.

Iodan is an American specialty, said to be a solution of 25 per cent. of iodine in the liquid constituents of goose grease, and claimed to be a non-irritant, readily absorbable iodine preparation, suitable both for internal and external use.

Iodipin Solidum, a solid form of iodipin (see Proceedings 1901, 636), is obtained by emulsionizing the original oily iodipin with the aid of *roborat* (*Ibid.*, 643). It occurs in form of yellow or grey-yellow scales, is odorless and tasteless, perfectly stable, and, containing 40 per cent. of iodipin, has an iodine value of 10 per cent. It is supplied in bulk and in form of 0.5 Gm. (= 7½ grain) tablets, the average daily dose being four tablets.—Pharm. Ztg., li, No. 13 (1906), 146.

Iodoformium Liquidum is a specialty recommended for impregnating bandages, etc., which is claimed to contain iodoform in a water-soluble condition by combining it with an alkali oleate. It is said to be readily absorbed by the skin, fortified by the anti-bacterial action of potassium soap.—Pharm. Ztg., li, No. 29 (1906), 336.

Iodoformium Liquidum appears to be the trade name given to the preparation of Blanchi described under "Liniments" as *saponated iodo-*

form liniment (which see). The process recommended by Blanchi is modified in some particular by K. Helfritz, but aside of details of manipulation this consists chiefly in the use of 95 per cent. alcohol containing 10 per cent. of ether instead of pure 95 per cent. alcohol recommended by Blanchi.—Apoth. Ztg., xxi, No. 33 (1906), 323.

Iodoformium Liquidum is the subject of a critical discussion by P. Welmans, who finds that this name, adopted for Blanchi's preparation of iodine (see also Saponated Iodoform Liniment), is a misnomer, since the products obtained both by Blanchi's and Helfritz's method are simply soap solutions of potassium iodide, potassium iodate, and very little iodoform.—Pharm. Ztg., li, No. 39 (1906), 436.

Iodoglyzin is the name given to an American specialty of ointment-like consistence which is said to be composed mainly of kaolin, iodine and glycerin, and claimed to be sterilized. It is recommended in all cases in which it is desirable to relieve the tension produced by the accumulation of fluids and inflammatory conditions of the body or organs, etc.—Pharm. Ztg., l, No. 102 (1905), 1077; from Münch. Med. Wschr., 1905, No. 51.

Iodomaisin is the name given to a specialty obtained by combining iodine with an albuminoid substance from maize which has been introduced under the name of maisin. Iodomaisin is a yellowish-white, hygroscopic mass, soluble in water and having a bitter taste. Being well tolerated by the stomach, it is recommended for the treatment of syphilis, emphysema, and other ailments requiring internal iodine treatment, in doses of 0.1 to 0.12 Gm. daily.—Rép. de Pharm., 1906, No. 2.

Irisol is the name given to a disinfectant, claïmed to be equivalent in effectiveness to lysol, but neither composition nor source is given.—Pharm. Ztg., li, No. 33 (1906), 374; from Berl. tier ärztl. Wschr., 1906, No. 16.

Isotachiol is the name given to a new silver salt, the precise composition has not yet been communicated, but it is probably related to "tachiol" (= silver fluoride), over which it is claimed to have the advantage of permanence and price. It is said to have powerful antiseptic properties, its bactericidal properties manifesting themselves even in dilution of 1:500,000, and being in such completely non-toxic, it may be advantageously used in this proportion for the sterilization of drinking-water.—Pharm. Ztg., li, No. 27 (1906), 313; from Münch. Med. Wschr., 1906, No. 11.

Karbolysin is the name given to pastilles containing pure carbolic acid, recrystallized from petroleum ether, and having a congealing point of 42° C.—this pure acid being combined with organic acid compounds of certain alkalies (as diluents?) and reduced to powder, which is suitable for compression into pastilles of any desired form. These pastilles are described as being readily soluble, but the amount of carbolic acid content is not stated.—Pharm. Ztg., li, No. 5 (1906), 54.

Kasucolum is the name given to potassium sulphoguaiacolate, exploited by an Austrian firm.

Kefyrogen-Tablets are a stable form of the kefir ferment intended for the convenient preparation of nutrient-kefir. One tablet is dissolved in half a liter of boiled milk and allowed to stand 48 hours. The milk is then converted into normal, sweetish-acidulous kefir.—Pharm. Ztg., li, No. 36 (1906), 405.

Krelution is the name given to a cresol-soap solution, containing 66 per cent. of cresols. It forms a green watery fluid, and is recommended as a wound antiseptic.

Kremulsion is a similar preparation, made with resin-soap, which is recommended for veterinary use, as a wash, particularly for the mange.—Pharm. Ztg., l, No. 84 (1906), 887.

Lactoserve is the trade name of a preparation which is claimed to furnish an acceptable and efficient substitute for *buttermilk* when suitably diluted with water. It is said to be produced by exposing pasteurized milk (1 p. pure milk and 2 p. skim-milk) to the action of lactic acid bacteria until the milk has reached a certain degree of acidity, evaporating the sour milk in a vacuum, at 50° C. to dryness, pulverizing the dry product, and mixing it with sugar, flour and vegetable albumen (in proportions not stated.) It is described as a whitish powder, having an agreeable acidulous odor, and forming when mixed with five parts of water an emulsion resembling fresh buttermilk, and having an agreeable and refreshing taste. It contains 12 per cent. of water, 22 per cent. of nitrogenous matter, 10 per cent. of fat, 46 per cent. of carbohydrates, 3 per cent. of lactic acid, and 5 per cent. of inorganic constituents—0.7 per cent. being phosphoric acid.—Pharm. Ztg., l, No. 76 (1905), 804.

La-Kama is the name given to a tape-worm remedy supplied in form of capsules in two strengths: I. Containing 1.25 Gm. of kamala and 0.1 Gm. of dry extract of pomegranate root bark: II. Containing 1.50 Gm. instead of 1.25 Gm. of kamala.—Pharm. Ztg., l, No. 65 (1905), 687.

La Zyma is the name given to a French specialty recommended as a remedy for gall-stones. It is supplied in form of tablets, which are said to contain as active constituents: Sodium choleinate, carduus marinus, taraxacum, nasturtium, cinchona, and a "ferment" derived from the liver of animals affected with gall-stones.—Pharm. Ztg., l, No. 79 (1905), 836.

Lecin is the name given to a clear solution of "neutral albuminate of iron," prepared according to a patented process.—Pharm. Ztg., li, No. 25 (1906), 278.

Lenicet is the name given to an aluminum acetate preparation recommended for the treatment of excessive sweating. It is described as an extremely fine, voluminous, snow-white powder, very sparingly soluble, and absolutely non-toxic; not affected by light or air, non-hygroscopic, and having only a faint acidulous odor. It is stated to be a new compound of acetic acid and alumina, containing in anhydrous form 70 per cent. of acetic acid and 30 per cent. of alumina, and should not be confounded with the well-known aluminum aceticum siccum, which is hydrous, and readily soluble in water. Suspended in water, it slowly and continuously splits off aluminum acetate, which enters into solution, and thus becomes effective. D. Med. Wschr., No. 36, 1905.—Pharm. Ztg., l, No. 74 (1905), 782.

Lenicet is stated by the manufacturer to have the composition $Al_2O_3.-C_2H_4O_2$. It is therefore to be regarded as the true aluminum acetate of single molecular composition. Pharmacologically it is siccative and antiputrescent, and is applied in form of dusting-powder (10 to 15 per cent.), or in form of salves, pastes, compresses, etc.—*Ibid.*, 887.

Leprine is the name given to a glycerin-emulsion, corresponding to "tuberculin," prepared from cultures of the *Bacillus Hansen*, and recommended for the treatment of lepra. It is administered subcutaneously in doses of 10 Cc.—Pharm. Ztg., l, No. 96 (1905), 1010.

Leprolin is a preparation of cultures of the leprosy bacillus in a liquid meat-juice medium, and is analogous to tuberculin. The liquid is filtered several times through sterilized Pasteur filters, concentrated to one-tenth, and again filtered. It is injected in doses of 10 Cc. into the muscles of the arm. According to the intensity of the reaction the dose is repeated, one to eight times, at intervals of a few days. Over 400 cases have been treated without ill-effects being noted. It is claimed that an arrest of the progress of the disease is obtained.—Pharm. Journ., July 15, 1905, 69; from Med. Klin., 1905, 396.

Liquor Thyreoideæ Conservatus is the name given to a thyroid preparation of the "Institute Marpmann," produced from the glands of animals which have been fed with potassium iodide or other iodine compounds. The solution represents 1 Gm. of the thyroid gland in 6 Cc., and is said to be stable. The initial dose is 3 drops. Recommended in goitre, obesity, myxœdema, etc.—Pharm. Ztg., l, No. 65 (1905), 689.

Lithosan, formerly called "Cholosan," is said to be composed of 75 Gm. peppermint water containing lithium (?); 100 Gm. glycerin; 100 Gm. aqueous tincture of rhubarb; 20 Gm. cola wine; 15 Gm. cognac; 10 Gm. sodium bicarbonate; 10 Gm. elixir of orange; 1 Gm. extract of celandine; 2 Gm. extract of muira (?); 5 Gm. tincture of valerian, and 2 Gm. tincture of castor. It is exploited as a remedy for biliary affections.—Pharm. Ztg., li, No. 13 (1906), 146.

Lyptol is the trade name of a wound antiseptic and general disinfectant, said to contain menthol, eucalyptol and thymol, which is miscible with water in all proportions.—Pharm. Ztg., li, No. 25 (1906), 278.

Magolan is the name of an antidiabetic specialty, in form of pills, which is essentially composed of calcium anhydroxydiaminephosphate, and is said to be prepared from the fruits of *Lupinus arabicus*, a leguminous plant in the Soudan.—Pharm, Ztg., li, No. 33 (1906), 374.

Maisin is the name given to a substance extracted by L. Vandin, E. Donard, and H. Labbé from maize flour by means of alcohol, which is said to form an excellent material for coating pills, since it is acted upon very slowly by the gastric secretion, but is quickly dissolved by trypsin and the intestinal ferments. It is absolutely insoluble in water, but very soluble in glacial acetic acid to the extent of 1 :1, and in alcohol to the extent of 2 :5. These solutions may be evaporated to a thick paste, which is admirably suited for stamping out into cachets, or for moulding into capsules. In thinner solution it may be applied as a pill-coating. From its insolubility in water it is specially suitable for the exhibition of aqueous solutions in the form of capsules, but alcohols or alcoholic preparations cannot be so put up.—Pharm. Journ., Oct. 7, 1905, 481 ; from Journ. de Pharm. et Chim., 1905 (6), *21*, 229.

Malonal is the trade name given to diethylmalonylurea, and is exploited as an efficient hypnotic—probably similar to the so-called veronal.—Pharm. Ztg., l. No. 69 (1905), 729.

Mammosan is the name given to a specialty, in form of a salve which is imbued with oxygen, which is recommended for inflammations of the breasts, sore nipples, etc.—Pharm. Ztg., li, No. 39 (1906), 438.

Matrel-Capsules are hardened capsules filled with concentrated extract of matico and santal oil.—Pharm. Ztg., li, No. 39 (1906), 438.

Meningitis Serum, obtained from the blood of horses inoculated with meningococci, has been introduced by W. Kolle and A. Wassermann, who recommend it in subcutaneous doses of 10 Cc. for the treatment of cerebrospinal meningitis. The preparation contains 0.4 per cent. of carbolic acid, and has proven perfectly innocuous when administered to animals. It is supplied by the Institute for Infectious Diseases of Berlin. —Pharm. Ztg., li, No. 33 (1906), 374.

Menthussin is a specialty exploited as a specific for whooping-cough, asthma and bronchial catarrh, which is stated to contain extr. menth. sacch. fluid., extr. thymi sacch. fluid., and syrupus tolutanus, as active constituents.—Pharm. Ztg., l, No. 96 (1905), 1010.

Mergal is the trade-name given to mercuric salt of cholic acid which has been introduced for therapeutic use. It has a composition corresponding to the formula $(C_{24}H_{39}O_5)_2Hg$, and forms a yellowish-white powder which is almost insoluble in *pure* water, but is somewhat more soluble in water containing salts of the alkalies, and particularly in solutions of common salt which dissolve it easily. The most suitable for this purpose is a 1 per cent. salt solution, but none of the solutions are perfectly bright. Alcohol dissolves mergal, with decomposition; cholic acid entering into solution and a gray-brown mercury compound precipitates. Acids decompose the salt, cholic acid being precipitated, while alkalies precipitate the mercury from its solutions, retaining the cholic acid. The two components may thus be separated and identified by known methods—the cholic acid giving Pettenkofer's reaction for the biliary acids.—Pharm. Ztg., li, No. 23 (1906), 259.

Mercuran is an American specialty said to be composed of 25 per cent. of mercury and 75 per cent. of goose grease. It is recommended as being absorbed more readily than ordinary mercurial ointments when applied by inunction.

Metaglukosal is the name given to a specialty recommended for the treatment of *Diabetes mellitus.* The active constituent is designated as being a glucoside having the composition $C_{36}H_{66}O_{33}$.—Pharm. Ztg., l, No. 85 (1905), 899; from Med. Techn. Journ., 1905, No. 19.

Metaplasma is the name given to a bandaging material, composed of an inner layer of absorbent cotton, medicated with salicylic acid, capsicum, or menthol, etc., and an outer, impervious layer of ordinary cotton. It is applied on the moistened skin, or after moistening the medicated layer with water or with dilute alcoholic liquids.—D. Med. Wschr., 1905, No. 32.

Migrophen, a specialty recommended for headache, migrain, etc., which is said to be a mixture of 10 parts lecithin and 90 parts of quinine sulphate. It is a dry, stable powder, and less bitter than quinine sulphate. —Pharm. Ztg. li, No. 33 (1906), 374.

Müglitzol (see Proceedings, 1905), according to a recent examination of Zernik, is apparently a solution of formaldehyde (about 6 per cent.) in denaturated alcohol, containing small quantities of an ichthyol-like substance and perfumed with volatile oils.—Pharm. Ztg., l, No. 65 (1905), 687.

Mycodermin is the name given to dried beer-yeast, which is recommended, like other yeast preparations, as an internal remedy in acne, eczema, furuncle, etc., in daily doses of ½ to 1 tablespoonful.—Pharm. Ztg., l, No. 65 (1905), 687.

Nalicin is the name given to a local anaesthetic, designed for odontalgic uses, which is stated to contain 1 Gm. of cocaine hydrochloride in 100 Gm. of a mixture of 1 per cent. solution of trinitrin, spirit, thymol comp., sodium chloride, formalin, phenol and distilled water. Examined by Zernik, all of these components were recognized, but trinitrin (nitroglycerin) was present only in traces and cocaine hydrochloride only to the amount of about 0.78 per cent.—Apoth. Ztg., xx, No. 67 (1905), 671.

Nervoform Pills, recommended as a roborant, are made with 2 Gm. quinine lactate, 2 Gm. iron lactate, 10 Gm. milk-sugar, 0.3 Gm. vanillin and 3 Gm. glycerin, divided into 100 pills.—Pharm. Ztg., li, No. 43 (1906), 481.

Neucleogen is the name given to a ferric neucleinate containing a relatively large percentage of arsenic in actual combination. It is said to be possible to obtain a compound containing, with 15 per cent. of iron, 5 per cent. of arsenic in form of neucleinate, but it is not stated that this high potency is reached in the preparation under discussion. It is supplied in the form of tablets containing 0.05 Gm. of "iron arsenide neucleinate," of which two are a dose; also in 10 per cent. solution for hypodermic use, of which 0.5 to 1 Cc. is a dose.—Pharm, Ztg., l. No. 91 (1905), 962.

Neu-Sidonal, introduced as a substitute for sidonal, and claimed by the manufacturer to be "the inner anhydride of quinic acid," has been subjected to analysis by F. Zernik, who finds that it is not a single chemical body, but a mixture of 75 per cent. of the well-known quinid (chinid), $C_7H_{10}O_4$, and of 25 per cent. of quinic acid, $C_7H_{12}O_5 + H_2O$,the so-called inner anhydride of quinic acid being identical with quinid.—Apoth. Ztg., xxi, No. 46 (1906), 463.

Nirvenol is the name given to an embrocation recommended for gout and rheumatism, which is described as being composed of 45 parts of tinctura thysalis angulata, 25 parts of extractum riten-kina (a South American caryophyllaceæ), and 30 parts of alcohol.—Pharm. Ztg., l, No. 65 (1905), 687.

Novocaine is the trade name given to "monochlorhydrate of p-aminobenzoyldiaethylaminoæthanol, a new local anæsthetic discovered by Einhorn and introduced into medicine by H. Braun. This salt crystallizes from alcohol in fine needles which melt at 156° C., and are soluble in an equal weight of water, forming a neutral solution, but require 30 parts of alcohol for solution. Alkali hydroxides and carbonates precipitate the free base from the aqueous solution of the salt, in the form of a colorless oil, which soon congeals to a crystalline mass; but solution of sodium bicarbonate is miscible with that of the salt without producing either precipitation or turbidity. The free base crystallizes from diluted alcohol with 2 mol. of water of crystallization, but from ether or ligroin in form of anhydrous shining prisms. The melting-point of the hydrated base is 51° C., of the anhydrous base 58°–60° C. The salt gives precipitates with the usual alkaloidal reagents, even from very dilute solution; its aqueous solution may be heated to boiling without decomposition, and remains perfectly clear when kept for days in loosely stoppered vials. When injected subcutaneously novocaine exerts powerful anæsthetic action, but the effect is not lasting. This is compensated, however, by the complete freedom from irritant action. Moreover, the anæsthetic effect may be increased to that of cocaine if novocaine is injected simultaneously with suprarenin. According to indications, Braun uses solutions of 0.25 Gm.

novocaine in 100 or 50 Gm. physiological salt solution with 5 or 10 drops of suprarenin solution (1 :1000), or 0.1 Gm. novocaine in 10 or 5 Gm. salt solution and 10 drops suprarenin solution.—Pharm. Ztg., l, No. 85 (1905), 899; from D. Med. Wschr., 1905, No. 42.

Nutrinum pulveratum is the name given to a nutrient and tonic specialty, which is described as being prepared from fresh hen's eggs, cacao and sugar. It should not be confounded with the so-called "nutrin," described in the Report for 1903–4 (see Proceedings, 1904, 625).—Pharm. Ztg., l, No. 89 (1905), 943.

Oenase is the name given to a yeast preparation representing ten times the weight of fresh wine-yeast, with the advantages of greater uniformity and unlimited stability. Antiseptics of any kind are not added. It is supplied in form of 0.5 Gm. tablets, which are recommended in doses of two shortly before the principal meal in cases of stomach trouble and particularly in loss of appetite. It is claimed to regulate the stools and to be of good service in diabetes, infectious diseases and rheumatic affections.—Pharm. Ztg., li, No. 36 (1906), 405.

Oliophen is the name given to a specialty exploited as an antigonorrhoic, which is stated to be a solution of salol in an extract of the "active constituents of linseed" in olive oil. It is supplied in gelatin capsules, each containing 0.5 Gm. of this preparation.—Pharm. Ztg., l, No. 87 (1905), 921.

Ollat is the name given to an emulsion exploited in Germany which is claimed by its manufacturers to contain 46.2 per cent. of fat (cod-liver oil ? Rep.), 15.1 per cent. of albumen, 22.3 per cent. of carbohydrate, 12.3 per cent. of moisture, and small quantities of salts derived from blood, together with a certain (indefinite) content of phosphoric acid.—Pharm. Ztg., li, No. 15 (1906), 170.

Omorol is the name given to a compound of albumen with silver, which is insoluble in water, but soluble in the tissue fluids, secretions, etc. Its pharmacologic action is that of a bactericide, and it is recommended for the local treatment of diphtheria.—Pharm. Ztg., li, No. 43 (1906), 481.

Omorol is described as being a fine yellowish powder, containing 10 per cent. of silver, and is soluble in physiological salt solution and in alkaline solutions in the proportion of 3 : 100.—Pharm. Ztg., li, No. 45 (1906), 503.

Opsonin is the name given to a serum exploited as a cure for tuberculosis.—Pharm. Ztg., li, No. 49 (1906), 546.

Oviferrin is the name given to an American specialty, claimed to be an iron compound of vitellin. It is supplied in form of a clear, reddish, nearly tasteless and odorless solution, and is said to contain 0.06 Gm. of Fe in a tablespoonful, which is the usual dose, recommended in chlorosis, anæmia, leucæmia, etc.—Therap. d. Gegenw., 1905, No. 12; from Pharm. Ztg., li, No. 99 (1905), 1045.

Ovogal is the name given to a compound of albumen and the bile acids (glycocholic and tauorcholic acids) obtained by a process for which a patent is to be secured. It is described as being a greenish-yellow powder, insoluble in water, diluted acids, ether, chloroform, benzol, fats, etc. While insoluble also in alcohol and acetone, these by prolonged contact extract small quantities of the bile acids from the compound. Alkalies dissolve ovogal, splitting it into its components, which are identified by the known tests. It is claimed for the new compound that while possessing the pharmacologic activity attributed to the biliary acids, it is free from the unpleasant side effects manifested by these acids either by themselves or in combination with alkaline bases. It is well tolerated in larger doses, being given in doses of as much as a teaspoonful in water, coffee, tea, or acidulous fruit syrups.—Pharm. Ztg., li, No. 41 (1906), 460.

Pankreon B is "Pankreon" intended for veterinary use, and particularly for the prevention and treatment of the dysentery of calves.—Pharm. Ztg., l, No. 89 (1905), 943.

Parareguün is a laxative specialty similar to "Regulin" (which see), but differing in containing liquid paraffin instead of dry agar-agar as a basis, and also a smaller percentage (10 per cent.) of extract of cascara sagrada. Its laxative action depends largely on the softening effect of the liquid paraffin upon hardened feces, but is promoted by the extract of cascara. It is supplied in capsules, each containing 3 Gm. of an emulsion of the ingredients named.—Pharm. Ztg., l, No. 89 (1905), 943; from Münch. Med. Wschr., 1905, No. 41.

Peru Lenicet is the name given to a compound of dry aluminum acetate—to which the name "Lenicet" has been given—with 10 per cent. balsam of Peru. It is recommended for the treatment of ulcus cruris, and is supplied in form of

Peru Lenicet Dusting Powder, composed of 10 parts balsam of Peru, 40 parts lenicet, and 50 parts talc, and as

Peru Lenicet Compresses, which are composed of strips of paraffined gauze, impregnated with the dusting powder.—Pharm. Ztg., li, No. 40 (1906), 449.

Pest vaccin (plague vaccine) is the name given to a product supplied for immunization against the plague. It is obtained by cultivating virulent plague bacilli on extended but thin layers of nutrient bouillon, precipitating the bacteriæ by means of an agglutinating plague serum of high potency, and thus removing the excess of fluid. The vaccine so obtained is then heated to 65° C. for an hour, and set aside. To control its sterility, a trace of potassium tellurate is placed into the controlling tube. This salt colors the living plague bacilli black, and produces a black cloudiness in the bouillon.—Pharm. Ztg., l, No. 91 (1905), 962; from D. Med. Wschr., 1905, No. 28.

Phagocytin is the name given to a sterilized solution of sodium nucleinate, containing 0.05 Gm. in 1 Cc. It is used subcutaneously as a nerve stimulant and to promote nutrition.—Pharm. Ztg., l, No. 91 (1905), 962.

Phenyform is the name given to a condensation product of phenol and formaldehyde, prepared under a patented process, as follows: Phenol is heated with solution of potassium hydroxide of 40° B., and an excess of 40 per cent. formaldehyde solution in the autoclave at 95° C. After the first, violent reaction, which requires about 15 minutes, the heating is continued until a sample of the red liquid, diluted with water after cooling, gives a voluminous precipitate on acidulation. The precipitate, when dried, forms a white, tasteless and odorless powder, which is insoluble in water, ether, chloroform, and in volatile or fixed oils, but is dissolved by alcohol, acetone, solutions of fixed alkalies and ammonia. When heated, the powder is decomposed with evolution of formaldehyde. Phenyform is exploited as a wound antiseptic.—Pharm. Ztg., l, No. 36 (1906), 405.

Pittylen is the name given to an antiseptic tar product, obtained by the action of formaldehyde on coniferous tar. It is a voluminous, brown-yellow powder, having a faint, not tar-like, odor. It is soluble in alcohol, acetone, collodion and in terpinol, and is recommended, in form of dusting powder, soaps, pastes, and plasters for the treatment of eczema.—Wien. Klin.-ther. Wschr., 1906, No. 3.

Plantal is the name of a specialty recommended as a remedy for gout, gall-stone, and diabetes. It is stated by the manufacturer to contain among other substances, free tartaric and citric acid together with alkali salts of the same.—Pharm. Ztg., l, No. 87 (Nov. 1, 1905), 921.

Plejadin is the name given to a migranin substitute, and said to be composed of salts of antipyrine and phenetidine.—Pharm. Ztg., li, No. 49 (1906), 546.

Proponal is the trade name given to "dipropyl-barbituric acid," $(C_3H_7)_2.C.(CONH)_2.CO$, a compound closely related to veronal or diethyl-barbituric acid (see Proceedings, 1904, 825). It forms colorless crystalline masses, melting at 145° C., and having a feebly bitter taste; soluble in 1640 parts of cold water, but requires only 70 parts of boiling water for solution, and is readily dissolved by diluted alkalies. Like veronal it is a hypnotic, but of superior activity, and more rapid in its effects, quiet sleep resulting within 15 to 40 minutes after administering 0.15 to 0.5 Gm. The remedy is best administered dry, in form of powder placed on the tongue and washed down with water, tea or some suitable alcoholic beverage.—Pharm. Ztg., l, No. 102 (1905), 1077; from Med. Klin., 1905, 1327.

Protéol Doyen is the name given to albumenformaldehyde compound, which is recommended as an antiseptic.—Pharm. Ztg., l, No. 91 (1905), 962.

Protosal is the trade name given to *salicylic acid glycerinformal ester*, $CH_2.O.OC.CHO.CH_2.CH_2O.C_6H_4(OH)$. It forms a colorless, oily liquid, of sp. gr. 1.344 at 15°, and boiling with slight decomposition at 200° C. under a pressure of 12 Mm. It is readily soluble in ether, alcohol, benzol, chloroform and castor oil, somewhat more sparingly soluble in olive oil and benne oil, and insoluble in water, glycerin, petroleum ether or vaselin. Diluted acids or alkalies split it up into salicylic acid, glycerin and formaldehyde. The new compound is recommended as a local remedy for the treatment of rheumatic affections, applied in form of a mixture composed of 25.0 per cent. protosal, 2.5 alcohol, and 22.5 olive oil.—Pharm. Ztg., l, No. 99 (1905), 1035; from Therap. Monatsh., 1905, No. 12.

Psoriolan is the name given to a reddish, ointment-like mass, which is used by direct inunction, and is recommended for the treatment of psoriasis, acne and other cutaneous diseases. It is prepared by heating margaric acid and mercuric oxide for hours at a temperature of 180° C.—Pharm. Ztg., l, No. 96 (1905), 1010.

Purgella is a name given to an agreeably tasting, aperient, effervescent salt, composed of 0.25 phenolphthalein, 75.0 sodum bicarbonate, 27.4 tartaric acid, and 100.0 fruit-sugar flavored with a volatile oil.—Pharm. Ztg., l, No. 65 (1905), 687.

Purgettæ (Tablettæ purgantes Crucenacensis—Aschoff) are silver-coated tablets composed of Kreuznach salt and 50 per cent. of dioxyphthalophenon (phenolphthalein).—Pharm. Ztg., li, No. 39 (1906), 438.

Purgolade is the name given to purgative chocolate tablets, each containing 0.06 Gm. dihydroxyphthalophenon (= phenolphthalein).—Pharm. Ztg., l, No. 69 (1905), 729.

Radiophor is the name given to a "radio-active" preparation manufactured and exploited by a Hamburg firm as a convenient medium for the treatment of affections in which the action of radium is desired. The medicament, which is said to retain its radio-activity permanently, is supplied in form of sheets, or leaflets about 1 in. square, and is applied to the affected part and kept in position by rubber or other bandaging. After use, it may be washed, and even boiled for a short time, without injury to activity. Furthermore, it is claimed that with the aid of this preparation the usual physical demonstrations of radium emanations may be conveniently carried out.—Pharm. Ztg., l, No. 61 (1905), 642.

Regulin is the name given to a laxative specialty composed of dry agar-agar with 25 per cent. of extract of cascara sagrada. Its laxative action is dependent on the softening effect of *dry* agar-agar on hardened feces, first observed by A. Schmidt, but this purely mechanical action is aided and augmented by the chemical action of the cascara. The dose of the powder, which is taken *dry*, is from a teaspoonful up to two tablespoonfuls daily, according to circumstances, the remedy being intended particularly for regulating the stools, rather than as a specific laxative.—Pharm. Ztg., l, No. 89 (1905), 943; from Münch. Med. Wschr., 1905, No. 41.

Rheumatikon, a specialty recommended as a remedy for gout and rheumatism, is a fluid which is claimed to contain the following percentages of active constituents: Natr. phosphor., 0.005; colchic., 0.05; aconit., 0.01; cocc. cact., 0.1 per cent. Zernik has subjected a specimen of this preparation to examination, but was unable to get any indication either of colchicine, aconitine, or sodium phosphate, nor of any other active component. On evaporation a faintly red residue was obtained, which proved to be simply milk sugar.—Apoth. Ztg., xx, No. 77 (1905), 779.

Rheusinal is the name given to a gout and rheumatism liniment which is claimed by the manufacturer to contain 6.4 per cent. of a chlor-iodine compound of fatty acid in alcoholic solution, 0.5 per cent. of mustard oil, and 14 per cent. of salicylic acid.—Pharm. Ztg., li, No. 40 (1906), 449.

Ricinus Antitoxin (Ricinusheilserum), prepared by a method proposed by R. Kobert, is about to be introduced for the purpose of rendering workmen handling ricinus press cakes immune to the poisonous constituent of the seeds.—Pharm. Ztg., l, No. 102 (1905), 1077; from Ztschr. f. ärztl. Fortb., 1905, No. 23.

Robeferrol "Rumpelt" is the name of a stable, aromatic iron-manganese-peptone elixir, exploited in Germany.

Salimenthol is a specialty composed approximately of equal parts of salicylic acid and menthol. It is a light yellow liquid, tasteless, and having a faint, agreeable odor. It is recommended as a disinfectant and analgetic, internally in capsules containing 0.25 Gm., externally in form of a salve, supplied by the name of

Samol, which contains 25 per cent. of salimenthol in an ointment base composed of lanolin, oil, wax and water, with a trace of medicinal soap.—Therap. Monatsh., 1906, No. 6.

Santal-Monal is the name of a French specialty, supplied in form of capsules, each containing 0.03 Gm. of methylene blue and 0.24 Gm. of balsamic oils. The remedy is recommended in doses of two capsules administered 3 to 5 times a day for the treatment of all affections of the urinary tract, the urine turning green during their administration.—Therap. Neuh., 1906, No. 2.

Santyl is the trade name given to the neutral salicylester of santalol, which is supplied in form of a nearly odorless and tasteless fluid, and also in gelatin capsules. It is recommended in doses of 30 drops, given in milk, for the treatment of acute gonorrhœa, and is claimed to have the same action as pure sandal oil, with the advantage of a less unpleasant taste and freedom from irritant action on mucous membranes.--Pharm. Ztg., l, No. 96 (1905), 1010.

Sapal is the name given to an alcoholic soap which is supplied both in the form of hard pieces and in an ointment-like consistence. It is recommended as a dermal disinfectant, and particularly as a remedy for diseases of the hair.—Pharm. Ztg., l, No. 84 (1905), 887.

Secornin is the name given to a liquid preparation of ergot, representing four times its weight of ergot, and standardized to contain 0.008 per cent. of amorphous cornutine.—Pharm. Centralh., No. 41 (1905).

Sojodin is the name given to the calcium salt of monoiodbehenic acid of E. Fischer and F. v. Mehring, the acid being produced by the action of hydrogen iodide on the erucic acid of colza oil. The salt, which has the formula $(C_{22}H_{42}O_2.I).Ca$, contains 26 per cent. of iodine and 4.1 per cent. of calcium, and occurs as a white, odorless and tasteless powder, which is insoluble in water, and is decomposed by heat with evolution of iodine vapors. It is well tolerated, and is recommended for the internal iodine treatment of diseases in place of potassium iodide, which it replaces, in the same doses.—Med. Klin., 1906, 157 and 164.

Solurol is the name given by Minkowski to a neuclein compound of phosphoric acid—neucleotin phosphoric acid—which has also been named

Thyminic Acid. It appears to be a definite chemical compound, to which the formula $C_{30}H_{46}N_4O_{15}.2P_2O_5$ is assigned by the author, and has the remarkable property of holding its own weight of uric acid in permanent solution, from which the latter can not again be separated by the ordinary reagents usually employed. Therapeutic experiments prove it to be a valuable remedy in the uric acid diathesis, and particularly in the treatment of gout, being free from the unpleasant side-effects incident to the gout remedies commonly employed. Solurol is a yellow, amorphous powder, fairly tasteless. and readily soluble in cold water, producing faintly acid solutions.—Pharm. Ztg., l, No. 69 (1905), 729.

Sonatin is the name given to a solution of benzoyl benzoate in castor oil, which is intended as a substitute for the so-called "Peruol" (see Proceedings 1901, 736).—Pharm. Ztg., li, No. 49 (1906), 546.

Sophol (*Formonucleinsilver*) is a compound of silver with formaldehyde nucleinic acid, containing 20 per cent. Ag. in the so-called "masked" form, in which it cannot be precipitated by the ordinary precipitants. On the other hand, the formaldehyde is in loose combination, being split off by simply warming the aqueous solutions of the compound, which must therefore be prepared cold. It is supplied in form of a yellowish-white powder very readily soluble in water, producing solutions which are perfectly transparent by transmitted light but opalescent by reflected. Being sensitive to direct light, sophol must be dispensed in brown-glass containers. Pharmacologically it acts like silver salts in general, but is markedly less irritant, and is claimed to have been used with particular success in the treatment of gonorrhoic blennorhæa of the eye.—Pharm. Ztg., li, No. 45 (1906), 503; from Münch. Med. Wschr., 1906, No. 20.

Staphylase Doyen is the name given by its exploiters to antistreptococci serum. It is supplied in several forms, such as *S. bromurée*, *S. granulée*, and *S. jodurée*.—Pharm. Ztg., l, No. 91 (1905), 962.

Stenol is the name given to a granular preparation, containing in a coffeespoonful 0.1 Gm. each of chemically pure caffeine and theobromine, which is exploited as a reliable remedy in insuffisance of the stomach, nervous and organic palpitation of the heart, etc.—Pharm. Ztg., li, No. 49 (1906), 546.

Sterol is the name given by a Hungarian manufacturer to a new ointment base, which is free from fats or oils, and stated to be immiscible with such, but readily miscible with water, glycerin, or alcohol.—Pharm. Ztg., l, No. 79 (1905), 836.

Stomachyl-Pills are prepared according to the following formula: Rhubarb, 20 Gm.; milk sugar, 5 Gm.; sodium bicarbonate, 5 Gm.; medicinal soap, 5 Gm.; oil of peppermint, 5 drops. Make 100 pills.—Pharm. Ztg., li, No. 43 (1906), 482.

Styptogan is the name given to a paste composed of potassium permanganate and vaseline, which is recommended as an excellent hæmostytpic in the treatment of wounds.—D. Med.-Wschr., 1906, No. 4.

Sulfopyrin is the name given to a salt of antipyrine and the so-called sulfanitic acid, having the composition $NH_2C_6H_4SO_3H.H_2O$. It is supplied in form of a white, odorless powder, rapidly soluble in comparatively small quantities of water, but, being non-hygroscopic, may conveniently be dispensed in form of powder. It is recommended particularly in coryza and in catarrhal affections of the larynx and throat; the adult dose being 1 Gm.—Pharm. Ztg., li, No. 15 (1906), 170.

Supranefran is the name given to a preparation of the active constitutuent of the suprarenal capsule, in stable solution of 1:1000, which is claimed to possess the pharmacological properties of the gland in a marked degree.—Pharm. Ztg., li, No. 45 (1906), 503.

Suprarenal-Tonogen is the name given to a solution of 0.1 Gm. of suprarenal extract, 0.5 Gm. of chloretone, and 0.7 Gm. of sodium chloride, in 100 Gm. of water.—Pharm. Ztg., li, No. 22 (1906), 248.

Tæniol is the name given to a worm remedy, which is stated to contain "Sebirol" (the active principle of a species of *Embelia*), dithymolsalicylate, and oil of turpentine. It is supplied in form of gelatin capsules.—Pharm. Ztg., l, No. 80 (1905), 846.

Tannisolum is the name given to a condensation product of tannin and formaldehyde, which is exploited as a remedy for intestinal catarrh and as an antiseptic.

Tanno-Organ Preparations, are preparations of the different animal organs by the action of tannin by a method similar to that by which "Pankreon" is obtained from pancreatin (see Proceedings, 1903, 701). These products are not affected by the juices of the stomach, but become effective when they reach the intestinal tract. The following preparations have been introduced and are described:

Heparon is obtained from beef livers with the addition of pancreas. It materially promotes the ability of the liver to decompose glucose.

Musculon, prepared from the muscles of beef, also with the addition of pancreas, possesses similar pharmacologic action.

Organa Glycolytica is the name given to a combination of heparon and musculon, while

Trion is the name given to the "tannoform" of the latter, which, it is believed, will prove an efficient anti-diabetic.

Ovaron is a tanno-organ preparation obtained from the ovaries.

Teston is obtained from beef testicles.

Thyron is obtained from the thyroids of the pig.

Splenon is obtained from the spleen of the pig.

All of these tanno-organ preparations are supplied in the form of powder, and also in form of tablets, each containing 0.1 Gm. of the active substance. They are indicated in the same cases for which the ordinary organ preparations are recommended.—Pharm. Ztg., l, No. 89 (1905), 943.

Tao is the name given to a specialty which is recommended as a nutrient in pulmonary affections. It is a powder containing 2.38 per cent. lecithine, 90.48 per cent. proteine, 5 per cent. balsam of Peru, 1.96 per cent. bipotassium phosphate and 0.175 per cent. sodium chloride. Being unpleasant to the taste in the powder form, it is supplied in the form of

Tao Waffles, each containing about 10 Gm. of the powder, with 5 Gm. of a nugat mass (composed of almonds and chocolate) and 2 Gm. of ordinary waffle mass.—D. Med.-Ztg., 1906, No. 37.

Teer (*Tar*) *Dermasan* is the trade name of a dermasan soap containing about 5 per cent. of concentrated liquor carbonis detergens, and 10 per cent. of beechwood tar. It is supplied in the form of a brown, soft, almost thick-liquid mass, is completely soluble in water, and is recommended as being a superior, non-irritant tar preparation.—Berl. Klin. Wschr., 1906, No. 12.

Theobromose (*Theobrominelithium*) is theobromine in which one atom of hydrogen is replaced by an atom of lithium. According to Bull. de

Scien. Pharmacol. (1906, 143) it forms silky glistening needles, which are soluble in about half their weight of water, but form an unstable solution, which becomes turbid gradually, owing to the formation of carbonate and separation of theobromine. Its pharmacological activity is claimed to be superior to theobromine itself.—Pharm. Centralh., xlvii, No. 15 (1906), 304.

Theophorin is the trade name given to a double salt composed of theobromine and sodium formate, consequently a "diuretin" in which the salicylic acid is substituted by formic acid. It is supplied in form of a white powder, soluble in ten parts of water, producing an alkaline solution which, on prolonged standing, becomes turbid, depositing theobromine. Theophorin is given as a diuretic in the same doses as diuretin, although it contains a larger percentage (62.5 per cent. instead of 50 per cent.) of the theobromine.—Pharm. Ztg., li, No. 30 (1906), 343; from Therap. Monatsh., 1906, No. 4.

Therapogen is the name given to a water-soluble compound of terpenes and derivatives of naphthalin, which has been recommended as a useful disinfectant and deodorant both in human and veterinary medicine. It is a dark-brown liquid, not unpleasant in odor, and has been used in form of 1–5 per cent. aqueous solution, moist bandages, tampons, or irregations in decubitus, leg-ulcers, otorrhœa, intertrigo, etc., and also in the dermatocoptic mange of horses, with good results.—Pharm. Ztg., li, No. 30 (1906), 341; from E. Merck's Annual Report, 1905.

Therapogen is claimed to have the advantage over other disinfectant remedies in that it does not attack the instruments that come in contact with it, does not make the hands slippery, does not coagulate albumen or peptone solutions, and does not have toxicity, nor cause unpleasant side-effects. The hands and instruments may be disinfected efficiently with a 2 to 3 per cent. solution; 2 to 5 per cent. solutions are recommended for washing wounds, 2 per cent. solution for injections, and 5 per cent. for deodorizing the sputum and dejecta of the sick room.

Therapogen Styron Soap is a compound recommended for the treatment of scabies.—Pharm. Ztg., li, No. 43 (1906), 482.

Thiosan Cakes is the name given to a specialty in the form of cakes, each containing 0.5 Gm. potassium sulphoguiacolate and 2 Gm. dry extract of malt.—Pharm. Ztg., l, No. 80 (1905), 846.

Thymylum Trichloraceticum is recommended as a cauterizing antiseptic for ulcers and for the treatment of wounds. It is obtained by heating trichloracetic acid and thymol together in molecular proportions, avoiding carefully an excess of either constituent, which in the one case would cause the separation of the thymol in crystals, in the other that of the trichloracetic acid in form of syrup. The addition of a small quantity of water to the product of the reaction causes it to solidify and to form a colorless crystalline mass, which is insoluble in water, but soluble in alcohol or ether. —Pharm. Centralh., xlvi, No. 35 (1905), 684.

Tinktin is the name given to a specialty containing the coloring-matter and other constituents of huckleberries, together with methylene blue. It is claimed to have antiphlogistic, anesthetic and antifermentative properties, and is recommended for the treatment of catarrhal conditions in general.—Pharm. Ztg., li, No. 27 (1906), 313.

Torosan is the name given to a blood preparation containing guaiacol, exploited for internal administration, becoming effective in the alkaline fluids of the intestinal tract. It is a brown-black powder, having a creosote-like odor and unpleasant, bitterish taste, and is insoluble in water and the usual organic solvents. It is also supplied in form of pills of 0.1 to 0.25 Gm., the daily dose being from 1 to 15 Gm.—Med. Tech. Journ., 1906, No. 8.

Traumasan is the name given to a salve recommended as serviceable in the treatment of local hyperhidrosis, escoriation, chaps, decubitus, burns, suppurating wounds and ulcers, etc. It is said to be composed of camphor, carbolic acid, lead tannate, boric acid, zinc oxide, and Peruvian balsam, with lanolin as base.—Pharm. Ztg., l, No. 85 (1905), 899.

Tumenolaammonium is a new tumenol product which is intended to replace the so-called tumenol venale, tersely called "tumenol," tumenolsulphon, called "tumenol oil," and tumenolsulphuric acid, called "tumenol powder." The new preparation is particularly recommended for the preparation of salves, the consistency of which has hitherto varied considerably because of the indiscriminate use of the one or the other of the older preparations. Clinical reports indicate that tumenol ammonium is milder and less irritant than the preparations heretofore in use.—Pharm. Ztg., l, No. 59 (1905), 624.

Urea Diethyl Malonica or diethyl-malonyl-urea, are the Latin equivalents for "veronal."

Ureol is the name given to a granular preparation containing 0.4 Gm. hexamethyltetramine; 0.3 Gm. sodium benzoate, and 0.1 Gm. lithium benzoate in a coffee-spoonful. It is recommended as a diuretic, urinary antiseptic and cholagogue.—Pharm. Ztg., li. No. 45 (1906), 503.

Urocitral, which is claimed to be a definite compound of theobromine and sodium citrate, having the composition $C_7H_7N_4O_2Na.C_3H_4(OH)(COONa)_3$, has been subjected to chemical examination by Zernik, who finds it to contain a much larger percentage of theobromine (=58.81 per cent.) than is demanded by the above formula (=about 39 per cent.), and that its formula probably corresponds to the formula $3[C_7H_8N_4O_2.NaOH].C_3H_4.OH.(COONa)_3$.—Apoth. Ztg., xx, No. 77 (1905), 779.

Urogosan is the name given to a mixture of 2 parts of "gonosan" and one part of hexamethylenetetramine, which is supplied in capsules containing 0.45 Gm. of the mixture, and is recommended for the treatment of inflammatory conditions of the bladder consequent to gonorrhœa and all bacterial ailments of the urinary passages.—Pharm. Ztg., l, No. 89 (1905), 943.

Uropurgol is said to be identical (synonymous) with "new urotropine" (methylenecitrate of urotropine).—Pharm. Ztg., l, No. 72 (1905), 761.

Utrogen is the name of a specialty which, like "Pyrenol," is said to be composed of "benzoylthymylnatriumbenzoylooxybenzoate," and is exploited as a remedy in asthma, rheuma, and pulmonary affections.—Pharm. Ztg., li, No. 49 (1906), 546.

Validol Cognac and Validol Liqueur are exploited by the manufacturers of *Validol* (see Proceedings 1898, 975) as a convenient form for the exhibition of the latter, which is usually administered in drop doses. These new preparations contain 3 drops in 20 Gm., or about a large tablespoonful.—Pharm. Ztg., l, No. 79 (1905), 836.

Valoin is the name given to a cream prepared by emulsionizing an ethereal silica-cerotine mass, and recommended for the treatment of skin eruptions and as a preventive of infection during operations.—Pharm. Ztg., l, No. 84 (1906), 887.

Vesipyrin is the name given to a new synthetic, to which the manufacturers assign the formula $C_6H_4.OCH_3CO.COOC_6H_5$. It may be regarded as being acetyl-salol, having the same relation to salol as that of aspirin to salicylic acid. Vesipyrin is a stable, crystalline compound, melting at 97° C., which is insoluble in water, but soluble in the usual organic solvents, and is nearly tasteless and odorless. It is obtained by the direct union of its components, and when administered is split up into these in the intestinal tract, the acetic acid liberated counteracting any toxic effect that may be produced by the liberated phenol. It therefore, it is claimed, has the advantage over salol of non-toxicity, and is recommended as a substitute for the latter in rheumatic, neuralgic and other affections in which salol is indicated, in dose of 1 Gm. to adults.—Therap. d. Gegenw., 1906, No. 2; from Pharm. Centralh., xlvii, No. 7 (1906), 130.

Vestosol is a formaldehyde preparation in the form of a yellowish-white salve, in which the formaldehyde (2 per cent.) is held in stable combination by the presence of certain metallic oxides in a neutral mixture of fats, so that even after prolonged keeping the preparation retains its activity unimpaired. It is recommended for the treatment of foot sweat. —Pharm. Ztg., li, No. 49 (1906), 546.

Visvit is the name given to a nutrient and tonic specialty, said to contain besides hæmaglobin albumen the nutrient constituents of milk, eggs and cereals. It is supplied in form of a grey-yellow, nearly tasteless powder, which may be taken either dry or in admixture with liquid foods. —Pharm. Ztg., li, No. 39 (1906), 439.

White Iodine Tincture is the name given to a specialty containing iodine, menthol, and camphor.—Pharm. Ztg., l, No. 96 (Dec. 2, 1905), 1010.

MATERIA MEDICA.

A. VEGETABLE DRUGS.

GENERAL SUBJECTS.

South African Drugs—Investigation.—C. F. Juritz reports the results of investigations of a number of South African plants.

Trichilia Dregei, E. Mayer.—From this plant, which was said to have caused the death of a Kaffir woman, slender needle-shaped crystals were obtained. They were not of an alkaloidal nature.

Mesembryanthemum Tortuosum, L.—This plant was apparently soporific and caused dilation of the pupil of the eye, lessening at the same time its sensibility. It appears to contain an essential oil possessing a peppermint-like odor.

Tabernæmontana Ventricosa, Hochst.—Fairly exhaustive tests were applied to needle-shaped crystals, which were found to constitute one-fifth per cent. of the bark of the "umjela" or quinine tree (*Tabernæmontana ventricosa*, Hochst). This tree is said to possess therapeutic properties of the same nature as those of quinine. The active principle was not quinine nor any other alkaloid of the cinchona group, but appeared to be an as yet undescribed alkaloid, crystallizing in needles from a chloroform extract. With concentrated sulphuric acid these crystals developed a faint vermilion color; Fröhde's reagent produced a dark blue changing into green, and Vitali's test, which is very delicate, yielded a fine crimson-lake. The tree attains a height of 50 feet in the Transkeian forests, with a diameter of 4 feet, and its abundance should render the drug procurable in large quantities, if it prove to be commercially valuable.

Buphane Toxicaria.—An uncrystallizable principle, probably an alkaloid was obtained from the bulb of *Buphane toxicaria*, Herb., which was the cause of death of two Kaffir women. The bulb contained about two-fifths per cent. of this alkaloid, which resembles brucine in its physiological effects, but differs therefrom in chemical reactions.

Acocanthera Venenata, Don.—Several examinations have been made of *Acocanthera venenata*, Don., chemical and physiological. The plant is highly poisonous, arresting the heart in systole, but may possibly serve as a valuable drug if the action were subject to proper control. The active principle is evidently an uncrystallizable glucoside; for the presence of this the most characteristic test appears to be concentrated sulphuric acid, which produces at first a yellow color, changing into pink, then becoming brick-red, and finally a clear violet.

Polygonum Tomentosum, var. *glabrum.*—An acrid resin acting as a powerful depressant, was obtained from the dried root of *Polygonum tomentosum*, var. *glabrum*, which contained 2½ per cent. of the resin. With sulphuric acid it produced a pink-yellow, changing, through cherry-red and deep lake, to a dirty brown, and then fading to a greenish tint.

Ornithogalum Thyrsoides.—A poisonous plant of extremely common occurrence in various parts of the Colony is *Ornithogalum thyrsoides*, which is frequently found accidentally mixed with forage, and has thus been the cause of death to horses on more than one occasion. No chemical examination has yet been directed towards the isolation of the poison. —Pharm. Journ., Jan. 27, 1906, 87; from Trans. S. Afric. Phil. Soc., xvi, ii, 111.

Chilian Drugs—Recent Additions to the Museum of the British Pharmaceutical Society.—E. H. Holmes describes a number of Chilian drugs which were presented by Professor G. T. Scott Elliot, a corresponding member of the Pharmaceutical Society of Great Britain, who visited Chili two years ago, and then promised to bring back for the Society's Museum such specimens of medicinal plants as he came across in his travels. It must suffice here to enumerate these drugs by their titles, leaving the details of description for consultation in the original, viz.:

Cephalophora aromatica; Convolvulus incanus, Vahl.; *Drimys winteri* Forst., var. *chilensis* (D. C.); *Gevuina avellana*, Molina; *Griselinia scandens*, Forst.; *Linum chammissonis*, Schæde; *Lithræa venenosa*, Miers; *Persea lingue; Psoralea glandulosa*, Linn.; *Solanum crispum*, R. et P.; *Solanum quercifolium*, Linn.—Pharm. Journ., Dec. 16, 1905, 834–835.

Medicinal Plants of the California Indians—Enumeration and Description of Uses.—Prof. Albert Schneider observes that the literature on Indian medicine is fragmentary, and the information thus far attainable touching upon the subject is very inaccurate. Indian medicines, in the broad sense of the term, include various largely ceremonial exercises and dances, superstitious beliefs, social customs and duties, etc. With the object of throwing some reliable light on the subject of the medicinal plants used by the California Indians, Professor Schneider enumerates a large number of plants, briefly explaining internal medication as it is comprehended by the savage intellect, and citing the use of the more important ones employed by the Indians of California in the treatment of diseases.

The list of plants is arranged in alphabetical order, and while very large, is not by any means claimed to be complete, so that it is quite possible that some important Indian medicinal plants may have been omitted. Unless otherwise specified, the use given applies to California Indians generally. In many instances, also, no information could be obtained as to how or for what special purpose the plant was used. This list may be consulted in Merck's Rep., Mar., April and May, 1906, 63–66, 95–96, and 127–128.

Parasite Plants—Cause of Rapid Darkening of Flowers, Leaves, etc., on Drying.—According to L. Gautier, the rapid darkening of the stems, flowers, and leaves of many root parasites such as *Melampyrum*, *Rhinanthus*, *Lathræa*, *Pedicularis*, *Bartsia*, *Monotropais*, etc., when bruised or in drying for the herbarium, has been proved to be due to the action of an oxydase which can be precipitated from the juice of the plants by alcohol, and can be kept in glycerin, apparently, without alteration for several months. In most of the plants there is a tanning principle, and it is by the oxidation of this that the coloration is developed. It has been found that boiling water destroys the oxydase, so that these flowers treated with boiling water will preserve their color on drying. The well-known effect of salicylic acid in preserving the color of herbarium specimens he has found to be due to its action on the oxydase, for the separated oxydase put in contact with a saturated solution of salicylic acid then gave the characteristic blue reaction with emulsion of guaiacum.—Pharm. Journ., Febr. 17, 1906, 167.

Vegetable Substances—Absolute Desiccation.—L. Maguenne has made experiments on the desiccation of vegetable matters, and finds that amyl bodies, and especially pure starch, can be easily and rapidly desiccated in dry air. Under these conditions the loss of water is greater than in a stove. The grains of starch also dry better in a vacuum at 40° than in air at 110°. The author formulates his conclusions as follows: 1. The constancy of weight of a vegetable product (probably also the majority of mineral and organic substances), after remaining some time in a stove in ordinary air, can at no temperature be considered as perfectly desiccated. 2. The use of an ordinary stove is absolutely useless for the rigorous analysis of very hygrometric bodies such as starch. 3. The absolute desiccation of such substances can only be effected even at a high temperature in a medium absolutely free from water-vapor. It is apparently complete in one hour by heating at 120° and two hours at 100° in a current of dry air. Under these circumstances the matter remains unchanged, and the proportion of water is found to be less by 1 per cent. than that which is present after a much longer period of desiccation by the ordinary methods.—Chem. News, Nov. 3, 1905, 212; from Compt. rend., *141*, No. 15 (Oct. 9, 1905).

Vegetable Drugs—Preservation. — Commenting on a recent recommendation that vegetable drugs, such as roots, barks, herbs, etc., should be stored in suitably labeled paper bags, Wippern, in opposition to this method of preservation, lays down the following practical rules which should obtain when purchased vegetable drugs of any kind are received:

1. Spreading out of the drug and careful inspection regarding quality and purity—if necessary, by pharmacopœial tests.
2. Supplementary drying in the drying closet.
3. Transfer into suitable containers.

It must be the experience of every one who regularly examines and treats his vegetable drugs according to these simple rules, that those drugs that are well-dried are best preserved if kept in well-closed containers. Moisture, mould, bugs and other living enemies of vegetable drugs are not sufficiently excluded in paper-bag containers, not to speak of the liability to loss in aroma and to suffer in color when preserved in the latter.—Pharm. Ztg., l, No. 100 (1905), 1067.

Vegetable Drugs—Determination of Extract Required by the Austr. Pharm., VIII.—The new Austrian Pharmacopœia directs with few exceptions the determination of the amount of dry extract obtainable from vegetable drugs, prescribing the following methods:

Determination of Aqueous Extract: To 10 Gm. of the finely powdered drug, in a glass flask, 100 Gm. of boiling water are added and the mixture is allowed to stand (with occasional shaking? Rep.) for 24 hours; then 50 Cc. of the filtrate are evaporated and the residue is dried at 100° C., and weighed.

Determination of Alcoholic Extract: 10 Gm. of the finely powdered drug are extracted with 100 Cc. of alcohol of the same strength as that directed for the preparation of extracts and tinctures from it—the process of manipulation and final drying and weighing being essentially the same as for aqueous extracts.—Pharm. Ztg., li, No. 28 (1906), 322.

Vegetable Drugs—Responsibility for Adulteration.—In an address to the Chemist's Club of New York, Prof. H. H. Rusby places the responsibility of the adulteration of vegetable drugs as follows: Probably in a majority of cases the fraud or error, whichever it be, begins with the collector. Almost without exception our drugs are collected by the most ignorant class of people, frequently by savages. The collections are then bought up by general merchants, who take them in exchange, and who have no special knowledge of drugs. The importer sells them through brokers, and they at length come into the hands of wholesale drug dealers, the first place which they have reached where we are justified in looking for that expert knowledge which is required for their intelligent estimation. By these dealers they are distributed, either to the large manufacturers or to the retail pharmacists. It is supposed that the manufacturer will employ an expert, qualified to detect errors and imperfections; but neither he nor the wholesale dealer is required to do so, and in very many cases they do not. This requirement does not make its appearance until the retail pharmacist is reached. He must be licensed, and theoretically, his license guarantees his ability to detect errors in the crude or powdered drugs coming from the wholesaler, or in the preparation coming from the manufacturer. Practically, it does so in only a comparatively few cases, and there is no guarantee that the ability will be used, even if it is possessed. Finally it is positively certain that it will not be employed, no matter how able and honest the pharmacist may be, because it is physically impossible for him to examine all the materials which come into his store." The author concludes that the responsibility for this unsatisfactory state of affairs rests upon associations like the Chemist's Club, the Society of Chemical Industry, the American Pharmaceutical Association, and the State associations, in that they do not get together and devise a system by which this work can be done.—Merck's Rep., July, 1905, 211–212.

Eclectic Drugs—Substitutes and Adulterations.—Introducing the subject of inferiorities, substitutions and adulterations that have come under his personal observation in a long list of vegetable drugs used by the Eclectic School of Medicine, Professor John Uri Lloyd submits the following definitions:

An *adulterant* is a substance mixed with, or designed to be mixed with, a drug (or other substance), for the purpose of cheapening the drug.

A *substitute* (*commercial*) is a substance offered or sold in place of another.

A *therapeutic substitute* is a substance nearly or quite paralleling another, or similar to another, in its therapeutic action.

Simple as these statements seem to be, shadings and complications that come to one concerned in the handling of drugs, lead to questionings and confusion in special directions,—directions where dictionary-makers have perhaps never personally trodden. To touch, even briefly, the common adulterations and substitution of either the past or the present, would necessitate a volume, and it is equally so with the methods that have been proposed and devised for determining the purity and quality of drugs, as witness the mass of literature bearing on this subject in the Lloyd Library, which is simply enormous. And, this literature itself is unquestionably but a drop in the bucket, as contrasted with what might be written, could the men with the test-tube and the microscope at their command be aware of the mysteries that lie outside the limited field their research has touched. When an analyst lies down at night satisfied that his work has at last been accomplished, he may rise in the morning to find that, while he slept, the artful manipulator turned the tables on him, and devised an unexpected adulteration to conform exactly with the test he so painstakingly laid down to establish the purity of the drug. Much of the adulteration is, however, not intentional, but rather through the ignorance or indifference of collectors or dealers, and especially is this true of many crude drugs, which must, in consequence, be classed under adulteration. The wide experience of Professor Lloyd in the field of botanical drugs, qualifies his present contribution based upon personal observation as being one of more than ordinary importance, and justifies the record here of the titles of the drugs considered by him so that the facts may become accessible in the original. The following list, although mainly of vegetable drugs, includes also some of an inorganic nature used in the eclectic practice of medicine:

Actæa alba (white cohosh); *Aesculus glabra* (Ohio buckeye); *Aesculus hippocastanum* (horse-chestnut); *Aletris farinosa* (star-grass); *Alstonia constricta* (fever-bark); *Apocynum cannabinum* (Indian hemp); *Asafetida; Benzoic acid; Borax; Bryonia; Cactus grandiflora; Cannabis indica* (Indian hemp); *Carbo ligni* (wood charcoal); *Caulophyllum* (blue cohosh); *Celastrus scandens* (false bittersweet); *Chaulmugra oil; Chionanthus* (fringe-tree); *Cimicifuga* (black cohosh); *Cinnamon; Colocynth; Croton oil; Cypripedium* (lady's slipper); *Damiana: Dioscorea villosa* (wild yam); *Echinacea angustifolia; Epilobium palustre* (willow-herb); *Eryngium aquaticum; Euonymus* (wahoo); *Eupatorium aromaticum* (white snakeroot); *Eupatorium perfoliatum* (boneset); *Euphorbia hypericifolia* (spotted spurge); *Gelsemium* (yellow jasmine); *Granatum* (pomegranate); *Grindelia robusta; Grindelia squarrosa; Hamamelis* (witchhazel); *Helonias dioica* (unicorn root); *Hepatica* (liverwort); *Hydrastis canadensis* (goldenseal); *Ipecac; Iris versicolor* (blue flag); *Jaborandi; Jeffersonia diphyla* (twin leaf); *Liriodendron tulipifera* (yellow poplar); *Lemon oil; Lobelia; Mentha viridis* (spearmint); *Nymphæa odorata* (white pond-lily); *Panax* (ginseng); *Passiflora incarnata; Phytolacca* (pokeweed); *Podophyllum* (May-apple); *Pulsatilla; Rhus toxicodendron* (poison oak); *Saffron; Salicylic acid; Salix nigra* (black willow); *Sanguinaria* (blood-root); *Scutellaria* (skullcap); *Senega; Senna; Serpentaria* (Virginia snakeroot); *Senecio* (life root); *Solanum* (bittersweet); *Solomon's seal; Statice caroliniana* (Marsh rosemary); *Trillium* (birthroot or bethroot); *Viburnum* (high cranberry); *Viburnum prunifolium* (black haw).—Pharm. Review, Sept., Oct. and Nov., 1905, 284, 297 and 329.

Powdered Drugs—Adulterations.—Dr. P. Schürhoff calls attention to a number of adulterations observed during the past year in connection with the examination of powdered drugs procured from reputable pharmacists and from a wholesale house controlled by a pharmacist of merit, who is also an official revisor.

Wheat Starch was not obtainable in the wholesale house referred to, nor from any of the retail druggists, although these had obtained their supply from other jobbers; corn (maize) starch being substituted in place of the official (G. P.) article.

Powdered Ipecac was adulterated with dextrin from potato starch, which is easily distinguished under the microscope by its peculiar form from the granular aggregation of the starch natural to ipecac.

Powdered Gentian was frequently found to contain stone cells, which are absent in the unadulterated root powder.

Powdered Wormseed (*Artimisia cina*) was grossly adulterated, containing from 40 to 50 per cent. mustard meal, from which the fixed oil had been expressed and the volatile oil distilled. The adulterant is readily recognized under the microscope by the large brown-colored elements of the seed-coat.

Powdered Pepper, supplied by a renowned spice firm under the name of "Suppenkoenigin," proved to be a most complex mixture, in which the microscope revealed the following substances: Pepper, ivory-nut meal (*Phytelephus makrocarpa*), potato meal, rice flour, cinnamon (bast fibres, cork substances, calcium oxalate), coniferous sawdust and mace.—Pharm. Ztg., li, No. 43 (1906), 479.

Powdered Drugs—Analytical Scheme for their Microscopical Examination.—Burt E. Nelson's series of papers on an analytical scheme for the microscopical examination of powdered drugs, begun in Merck's Report of July, 1900 (see Proceedings, 1901, *et seq.*), and continued in monthly installments with more or less regularity since then, is continued in the same journal during the past year, the microscopic features, illustrated by numerous drawings, of the following drugs being described since the date of the last report:

FLOWERS: *Artemesia pauciflora* (santonica); *Sambucus canadensis; Hagenia abyssinica* (cousso); *Eugenia aromatica* (caryophyllus); in the July number, 1905, 201–202. *Crocus sativus; Humulus lupulus;* in the October number, 1905, 298–299. SEEDS: *Colchicum autumnale; Dipterix odorata* (tonka) in the November number, 1905, 339–340. *Myristica fragrans; Zea mays; Fogopyrum esculentum* (buckwheat); *Oryza sativa* (rice); in the December number, 1905, 367–368. *Datura stramonium* (stramonium): *Sterculia acuminata* (cola); *Coffea arabica;* in the January number, 1906, 6. *Physostigma venenosum; Prunus amygdalus; Avena sativa* (oats); *Cucurbita pepo* (pumpkin); in the March number, 1906, 67–68. *Strophanthus hispidus; Triticum sativum* (wheat); *Hordeum distichon* (barley); *Secale cereale* (rye); in the April number, 1906, 98–99. *Delphinium staphisagria* (stavesacae); *Brassica nigra* (sinapis); *Trigonella fœnum-græcum* (fenugreek); *Linum usitatissimum; Strychnos nux-vomica;* in the May number, 1906, 129–131. Classification of seed-powders based upon their more apparent sensible properties, in the June number, 1906, 166–167.

Powdered Drugs—Possible Change of the Microscopic Characters by Sifting.—Attention is drawn to the possibility of changes in the microscopic image presented by powdered drugs, due to attrition and subsequent sifting. Thus, it is mentioned in "Südd. Apoth. Ztg.," 1905, No. 92, that in an examination of powdered cinchona bark under the microscope, the presence of the characteristic bast fibres has repeatedly been missed entirely, or such were present only in a subordinate degree. It is suggested that this may be due to the repeated sifting of the drug in the process of powdering, whereby the bast fibres accumulate in a certain portion or fraction of the powdered drug.—Pharm. Ztg., l, No. 98 (1905), 1031.

Drugs Containing Tannin—Enumeration and Classification.—Philemon E. Hommell communicates an interesting paper in which he mentions the official and unofficial drugs known, at the present time, to contain tannic acid, the percentage contained in most of them, and the parts of the plant containing it. He also submits a classification based on the probable or relative value of the different drugs as typical astringents, and on the deficiency of those which cannot be considered as possessing valuable astringent properties.—Proc. N. J. Pharm. Assoc., 1905, 61–66.

ALGÆ.

Irish Moss—Preparation of Artificial Gum.—According to "Tropenpflanzer" (1905, 282), an artificial gum is produced from Irish moss, as follows: 30 parts of the moss are treated with 1000 parts of water at 80° to 90° C., until all the mucilage has been extracted. After removal of suspended matter, the solution is mixed with 100 to 200 parts of starch, which has previously been rubbed smooth with water, the mixture is spread out in thin layers, and dried at 100° C. A colorless gum is thus produced, which is readily broken up, softens in cold water, and forms a thick mucilage on heating, which may be used as a substitute for acacia mucilage.—Pharm. Journ., Feb. 24, 1905, 227.

BACILLARIÆ.

Bacillus Coli—Use of Cultures for Standardizing Disinfectants.—The Royal Sanitary Institute has appointed a special committee to consider the standardization of disinfectants. Some observations upon this subject are submitted in a paper by Professors Kenwood and Hewlett, and the results of a number of experiments are given to ascertain the effects of various solutions of some of the principal disinfectants on the selected bacillus. It had been originally proposed to employ *Bacillus typhosus* as the test-object, but reasons are given for the use in preference of the *Bacillus coli*, and the latter was accordingly made the basis of the tests. Tables are given showing the action of 5 per cent. solutions of izal, cyllin, phenol, and phenyle on pure cultures of this bacillus. Numerous additional tests conducted by Lieutenant-Colonel Firth and Professor Macfadyen for the further elucidation of the question as to what method is best adapted for the routine standardization of disinfectants were carried out for the committee, and the results are here tabulated. It was ascertained also that phenol was superior to mercuric chloride, as the standard reagent for comparison.—Pharm. Journ., Mar. 31, 1906, 387; from Journ. Roy. San. Inst., February, 1906.

FUNGI.

Ergot—Historical and Critical Review of its Active Preparations.—Carl Schnell contributes a very interesting and comprehensive historical and critical review of the different ergot preparations which have been proposed from time to time in the course of years. These are known partly by the name of ergotin and partly as extracts of ergot, and may conveniently be considered in groups, consisting repectively of dry, thick, liquid, alcoholic and dialysed extracts. Leaving out of consideration the immediate proximate constituents of ergot, such as the alkaloids ergotinine and sclerotine, sclerotic acid, scleromucin, etc., the group of

Dry extracts comprises ten preparations, namely, "Ergotin" of Wiggers, the oldest one to which the name of "Ergotin" has been applied, and the "Extract. secalis dialysat" of Wernich, although the latter is usually supplied in a condition which practically places it in the group of

Thick extracts. These consist essentially of extracts obtained by one or the other of the numerous modifications of Bonjean's method for preparing the extract to which he also applied the name "Ergotin." and which, as is well known, is simply an aqueous extract from which gummy constituents and a portion of salts are removed by precipitation with alcohol. While the credit for this method of obtaining a purified aqueous extract of ergot therefore belongs to Bonjean, the somewhat indefinite formula as it appears in the "Comptes rendus" for July 17, 1843, has left an uncertainty in regard to the intended product and has led to the suggestion from time to time of modifications, among which the author mentions and discusses the methods of Cadet; of Cotillon; of the Codex français, the Swiss and German pharmacopœias (for extr. secalis cornut); the methods of obtaining extract. secalis corn. depurat, or bisdepuratum pro injectione, of Wernich (the latter in lieu of the dialysed preparation, which is unnecessarily expensive) and of Madsen.

Liquid Extracts, are the so-called fluidextracts of the different pharmacopœias. Among these the author discusses particularly the liquid extract of ergot of the British Pharmacopœia; the so-called "Ergotin Portans," also an English preparation; the liquid extract proposed by Hager, which corresponds in its essential characters to the last named, both containing scleromucin and sclerotic acid which are regarded by Dragendorff as the essential active constituents of ergot; and the "Ergotin Yvon," which is however not so much a fluidextract as it is a standardized solution of alkaloid based upon the observation of Wiggers, Wenzel and Tanret.

Alcoholic Extracts are represented only by a single example. This is in reality the resin of ergot, obtained by Salli's formula, and contains the toxic constituents of the drug, which in all the other preparations are carefully eliminated. Among the

Dialysed Extracts, the author discusses the extract of Wernich previously referred to as "bisdepuratum;" a dialysed extract, suggested by Bombelon, from which the mycose and scleromucin are removed; and a dialysed extract prepared by the process of Finzelberg.

Summing up, the author briefly reviews the nature of the proximate constituents of ergot that have been heretofore described, and arrives at the conclusion that a properly prepared

Aqueous Extract of Ergot, from carefully selected ergot of rye (picked from the ears) and of undisputed quality, when treated with alcohol as explained below, will supply all medicinal requirements, and will replace all dialysed and other extracts of ergot that have heretofore been proposed. Without going into the details of manipulation, the process is as follows: The well dried and coarsely powdered drug is extracted by percolation with cold distilled water (not exceeding 20°–25° C.) until the percolate passes only faintly colored; the percolate is concentrated in a porcelain capsule on a steam-bath to about one half the weight of the ergot taken in operation and the amount of dry extract determined in an aliquot portion. It is then adjusted so that 125 parts shall contain 50 parts of dry extract, 75 parts of 80 per cent. alcohol are gradually added, stirring with a glass rod, and set aside over night so that the gum and albuminoids may subside completely, and then filtered. The filtrate so obtained is a solution of the extract in 40 per cent. alcohol and retains the scleromucin and sclerotic acid with a minimal loss of active constituents. It is concentrated with constant stirring on the steam-bath to the consistence of a thick extract, and this is then immediately washed, twice successively, with the strongest rectified alcohol, previously heated to boiling. This has for the purpose the removal of any resinous or oily particles that may have been retained, and also of the mycose and the so-called acribus, which are soluble in hot alcohol. The decanted alcoholic solution yields a granular residue, having an acrid and disagreeable taste, while the washed extract, after removal of adhering alcohol, constitutes a homogeneous, brown mass, having an agreeable ergot odor and taste, and represents as nearly as possible the total active constituents of the drug freed from easily decomposible and unnecessary extractive matter. The aqueous solution is yellow, perfectly clear, and of superior activity.—Pharm. Ztg., li, Nos. 37 and 40 (1906), 413 and 447.

Ergot—A New Active Constituent.—E. Vahlen has isolated a new active constituent of ergot, which differs in some important respects from the hitherto known substances separated from ergot. In 1884 Kobert discovered that ergot contained sphacelinic acid, a substance which produces gangrene, and cornutine, which produces convulsions, but it has since been shown that these substances are not single bodies. The new substance now isolated by Vahlen, which he has named

Clavin, is claimed to be a chemically pure and single substance, does not produce either gangrene or convulsion, and, in further distinction of the two previously named substance, is soluble in water. He argues that the ecbolic action of ergot of rye is due to a substance which used to be extracted from the powdered ergot by water, and therefore must be soluble in water. It need not have the action of the other constituents of ergot, and need not give rise to either of the two poisonous effects. When the substance is dissolved in water and the solution evaporated, one obtains microcrystalline powder, while from a hot concentrated solution in alcohol prismatic crystals of 7 Mm. to 8 Mm. length separate out. Its empirical formula is $C_{11}H_{22}N_2O_4$. So far it has been found impossible to form salts. When applied by intravenous injection in cats and dogs, even in large quantities, it has proved itself a harmless body. The direct action on the uterus of pregnant animals was found to be very energetic. These laboratory experiments appeared to justify therapeutic experiments on human beings. This has been carried out in four cases with positive results. The substance was employed in 2 per cent. solutions and exhibited by subcutaneous injection in doses of 0.01 Gm. and 0.02 Gm. These cases show the power of inducing uterine contractions in labors in which the pains have become feeble and seldom. The author considers that the drug is absolutely free from any local irritating action, and can, therefore, be given without hesitation subcutaneously. He finds it is wise to prepare the solution fresh in order to ensure full activity of the substance, although he has found that prolonged boiling, and the addition of various reagents, fail to decompose it in solution.—Pharm. Journ., Oct. 21, 1905, 554; from D. Med. Wchschr., Aug. 10, 1905.

Ergot—Determination of Cornutine.—G. Fromme recommends the following method for the assay of ergot: 25 Gm. of the finely powdered drug are extracted by percolation with petroleum benzin until a drop of the percolate no longer leaves a fat stain on paper. The residual moist powder is then transferred without loss to a smooth sheet of paper, and after complete drying into a vial with 125 Gm. of ether; 1 Gm. of calcined magnesia, and 10 Gm. of water are added; the mixture is shaken vigorously occasionally during half an hour, and then rapidly filtered through a tuft of absorbent cotton. A small quantity of magnesia and 1 Gm. of water are now added to the filtrate and shaken with it, and the whole allowed to stand until the ether solution has clarified; then 100 Gm., or as much as possible (each 5 Gm. representing 1 Gm. of ergot) are decanted into a vial and shaken out successively with 25, 20, and 15 Cc. of one half per cent. hydrochloric acid (or again with smaller quantities until the acid liquor no longer gives a reaction with Mayer's reagent). The united acid fluids are placed into hot (nearly boiling) water until the dissolved ether is completely evaporated, allowed to cool, shaken with about 0.1 Gm. of talc or kieselguhr, and filtered, the aqueous rinsings of the flask being passed through the same filter. The filtrate is then supersaturated with ammonia water, the alkaline fluid is shaken out with 25, 10, 10 Cc. of ether, the ether solutions being filtered successively into a small tared Erlenmeyer flask, the either distilled off, and the residue dried to constant weight in the exsiccator. If 100 Gm. of the ether extraction has been obtained, the weight found, multipled by 20, gives the percentage of cornutine in the ergot under examination.—Pharm. Ztg., l, No. 72 (1905), 772; from Cæsar & Loretz; Report.

Ergot—Yield of Extract with Different Solvents.—According to "Helfenberger Annalen" ergot yields the following percentages of dry extract by extraction with different solvents: Cold water, 15.70 to 20.12 per cent.; hot water, 13.31 to 18.69 per cent.; menstruum of alcohol, 1 part, water, 4 parts, 14 4 to 18.7 per cent.; diluted alcohol (= 68 per cent.), 10.92 to 16.48 per cent.—Pharm. Ztg., l, No. 79 (1905), 835.

Lycoperdon Bovista—Chemical Examination.—Bamberger and Landsiedl have determined by their chemical examination of *Lycoperdon bovista* during different stages of its development, that the aqueous exudation formed when the fungus ripens contains urea. The young (immature ?) fungus contains cholesterin-like bodies, two of which, belonging to the ergosterin group and melting at 158°–159° and 163.5°–164° respectively, were isolated. The young fungus also contains a crystalline body, rich in nitrogen, apparently belonging to the cerebroside group of substances, and besides other amino acids also tyrosin.—Pharm. Ztg., l, No. 88 (1905), 929; from Monatsh. f. Chem., 1905, xxvi, 8.

Yeast—Therapeutic Action.—W. Malden, speaking of the therapeutic action of yeast, observes that living yeast does not possess any directly bactericidal or phagocytic properties, nor does it, when injected subcutaneously, pass unaltered into the circulation, but is quickly disintegrated and absorbed. When injected intravenously it causes intravascular clotting of the blood, and is therefore an unsafe substance to use in this manner. Subcutaneous injections of pure cultures of living yeast can be made in animals without producing any ill-effects except the formation of a slight swelling at the point of puncture, which rapidly disappears. Killed yeast produces exactly the same effect as living. The immediate effect of subcutaneous injections is to produce a leucopenia rapidly followed by a leucocytosis. The effect of subcutaneous injections of yeast on animals infected with streptococcus pyogenes, staphylococcus albus and tubercle is in some cases to cause a recovery of the animals and in others to prolong their lives. The effects produced by the injections of yeast are probably due to the liberation of the nucleo-albumen contained in the cell, which acts as a powerful stimulant to the cells of the body generally, and causes a large increase in the antiseptic and antibactericidal substances normally present in the blood serum.—Pharm. Journ., July 8, 1906, 33; from B. M. J. Suppt., July 1, 1905, 7.

Yeast.—Cyanogenetic action due to *Emulsin,* which see under "Organic Chemistry."

LYCOPODIACEÆ.

Lycopodium—Sophistication with a Product from Gallipot Resin.—C. Gallois observes that, as usually occurs when a drug becomes scarce, and, therefore, high in price, more or less ingenious adulterants and substitutes crop up. This has recently been the case with lycopodium, the so-called "substitute" being the product of the action of dry ammonia on galipot resin heated to near its melting point, dried, and powdered. Although the appearance of the "substitute" is sufficiently distinct from that of true lycopodium when they are compared side by side, a mixture of 50 per cent. might easily pass a superficial examination. The appearance of the substitute under the microscope will, however, at once reveal its presence, the transparent irregular grains of which it is composed being quite different from the spores of lycopodium. Also its behavior towards the solvents chloroform, ether, and alcohol is different; to these it yields a certain amount of soluble resinous matter, whereas lycopodium is practically insoluble. The substitute flashes when thrown into a flame like the pure drug; so do many resinous powders.—Pharm. Journ. April 21, 1906, 471; from Journ. de. Pharm. et Chim., 1906, *23*, 242.

Lycopodium—Adulteration.—Gehe & Co. call attention to a number of adulterations of lycopodium observed recently. One sample was composed exclusively of pine pollen. Another which resembled true lycopodium very closely in its texture and mobility, was composed of maize-starch, which had probably been subjected to a toasting process, and then colored with methylorange. The latter was readily extracted by alcohol, while the starch granules could be identified without much difficulty under the microscope, although many of them were somewhat modified in shape by the roasting process to which the starch had been subjected.—Pharm. Ztg., li, No. 36 (1906), 402; from Gehe & Co.; Frühjahrsbericht, 1906.

Lycopodium—Examination.—G. Fromme observes that although the G. P. IV, permits an ash-content of 5 per cent. in lycopodium, pure lycopodium contains barely 1 per cent., and consequently any quantity in excess of this percentage must be due to foreign mineral matter. For the determination of ash he recommends the process described by him for the examination of saffron (see p. 729). Added starch or sulphur, which would of course be consumed by incineration, will sink and form a deposit if the lycopodium is shaken with water. The deposit, if any, should be examined under the microscope, while the starch may also be identified by its reaction with iodine.—Pharm. Ztg., l, No. 73 (1905), 771; from Cæsar & Loretz's Report.

GRAMINACEÆ.

Cereals—Natural Alkalinity of the Grains.—Boidin and Woussen have endeavored by experiment to determine whether the seeds of cereals have naturally an acid or an alkaline reaction. Having preliminarily determined that ammonia is liberated when solutions of ammonium salts are boiled with disodium phosphate and trimagnesium phosphate, and even, though in a far inferior degree, by tricalcium phosphate, the authors boiled aqueous extraction of maize and of rice with ammonium sulphate and found here also ammonia in the distillate. This leads to the conclusion that these seeds must be regarded as being alkaline at elevated temperatures. Indeed, it was found that maize manifests an alkaline reaction on alizarin even at the ordinary temperature: 10 Gm. of maize meal triturated with water consuming 5 Cc. of $\frac{N}{10}$ hydrochloric acid. Nevertheless, it is impracticable to determine the alkalinity of seeds by trituration, because these contain also other basic substances.—Pharm. Ztg., l, No. 88 (1905), 929; from Ztschr. f. Unters. d. Nahrungsm, 1905), No. 8.

Barley.—Alkaloidal Constituent from the malted grain. See *Hordenine* under "Organic Chemistry."

PALMACEÆ.

Carnauba Wax—Description and Uses.—The finding of a block of about one pound in weight of a waxy substance on the coast of one of the small Shetland Islands, and its identification with carnauba wax instead of, as was hoped, ambergris, leads John Lothian, to whom this substance was originally submitted for identification, to give an interesting description of this vegetable wax and its uses, which may be consulted in Pharm. Journ., Dec. 23, 1905, 862.

Dragon's Blood—Botanical Origin.—The difficulties of determining the botanical source of drugs are well shown in a note of E. M. Holmes in connection with a recent addition to the museum of the Br. Pharm. Society, of Sumatran fruits yielding the so-called dragon's blood. The botanical source of East Indian dragon's blood is usually given as *Dæmonorops draco*, Mart. (*Calamus draco*, Willd.); but it has long been suspected that the different sorts of dragon's blood are yielded by different species. Thus, in 1873, a very beautiful specimen of dragon's blood of an almost carmine-red color was presented to the Museum by the Commissioners of the Court of the Netherlands Indies at the Paris Exhibition, and in 1890 some information was contributed by Dr. M. Treub, Director of the Buitenzorg Botanic Gardens, on the source of the different kinds of dragon's blood, which showed that at Pontianak, in West Sumatra, whence the beautiful bright-red specimen of dragon's blood came, three different species of the plant are characterized by having fruits of different size ; but at that time the botanical source of these fruits was unknown. The smallest fruits yield the most beautiful and most valuable dragon's blood, which is called "Djernang Mundai;" the moderate-sized fruits yield the kind sold in flat cakes of varying size, known as "Djernang Bervewang;" while the largest fruits yield the dragon's blood sold in pipes, which is known as "Djernang Kœkœ." From a monograph of Dr. Beccari, published in the "Records of the Botanical Survey of India" in 1903, it now appears that *Dæmonorops draco*, Blume, consists of two species, one which Beccari calls *D. propinquus*, the other being the *D. ruber* of Martius, both found in Penang and Sumatra, and doubtless yielding dragon's blood. He mentions also a Borneo species, named by him *D. mottleyi*, having fruits with a broadly ovate base, and yielding a red resin abundantly. To these three species Mr. Holmes on the authority of Mr. H. N. Ridley, adds a fourth species as certainly yielding commercial dragon's blood, namely *D. didymophyllus*, while Beccari mentions several other species having fruits which exude a red resin, although whether it is commercially obtained from them is not certain. Concerning the Sumatran fruits initially mentioned, these were sent to the museum by Mr. C. T. Johnson, a former student of the Society's School, and now a resident of Penang. These fruits were of the larger kind, and correspond in size and character with that of *D. draco*, figured by Blume in "Rumphia," and are therefore probably those of *D. propinquus*, Beccari. They are the kind from which dragon's blood is prepared, possibly the "Djernang Kœkœ" of Java, but Mr. Johnson found that, owing to the hostility of the natives it is almost impossible for a European to penetrate much beyond the towns on the coast line of Sumatra without danger to life.—Pharm. Journ., Dec. 16, 1905, 933.

LILIACEÆ.

Natal Aloes—Obscurity of Botanical Source.—E. M. Holmes mentions that for nearly twenty years he has endeavored whenever an opportunity offered to obtain specimens of the plant yielding the opaque aloes described in works on Materia Medica as Natal aloes. In commerce this is now almost unknown, the aloes made in Natal, and now coming from there, being invariably translucent and usually reported to be made from *Aloe ferox*. Aloes procured in Natal in 1885, with specimens of the plant, corresponded in its characters with the cape aloes of commerce, and the plant was identified to be *Aloe platylepsis*. The only plant in the Kew Gardens whose leaves yield a juice which gave a chemical reaction like that of the original Natal aloes was *Aloe succotrina*, a species which was formerly, but erroneously, supposed to yield socotrine aloes, and the exact country of which this species is a native appears to be still unknown. The endeavors of Mr. J. Medley Wood, Curator of the Botanic Gardens at Durban, Natal, made at intervals to learn where the original Natal aloes was manufactured, lead him to the conclusion that it is prepared in the Transvaal or Rhodesia. He has recently sent a photograph of an aloe which he thinks may be the source of the Natal aloes to Mr. Holmes, who still hopes to get specimens of the plant some day which will enable the identification of the source of this drug.—Pharm. Journ., Mar. 17, 1906, 314.

Aloes—Determination of Resins.—Following the method recommended by Tschirch and Hoffbauer, L. von Itallie has adopted the following manipulation for the determination of resin in aloes: A mixture of 5 Gm. of the powdered drug and 5 Cc. of methyl alcohol is heated in a 50 Cc. flask until a homogeneous liquid is produced, which, after cooling to 60° C. is shaken for 5 minutes with 30 Cc. of chloroform. If then the flask is placed in cold water, the resin readily settles and adheres to the sides of the flask. Then, the chloroform having been decanted, the residual resin is treated thrice more in the same manner with methyl alcohol and chloroform. The residue now forms a yellow powder, which is dried at 100° C., and weighed. In this way cape aloes yielded from 56.2 to 82 per cent. of resin; Curaçao aloes, 78.3 to 88.6 per cent.; and Aruba aloes, 61.04 per cent.—Pharm. Ztg., l, No. 79 (1905), 835; from Pharm. Weekl., 1905, No. 27.

Colchicum Autumnale—Cultivation.—According to E. M. Holmes, the colchicum plant prefers a stiff calcareous clay, and a sunny position, although it will flower in the shade. The flowers will appear in August and September without the leaves, and the latter appear in the spring, the fruit ripening in May. They are most effective when planted in clumps. If planted singly their large leaves make the garden look very untidy when they wither.—Pharm. Journ., July 1, 1905, 5.

Squill—Yield of Extract with Different Solvents.—According to "Helfenberger Annalen," squill, examined during 1904 yielded with different menstrua the following percentages of extract, dried at 104° C.: With alcohol (90 per cent.), 4.27 to 4.31 per cent; with 68 per cent. alcohol, 69.16 to 70.36 per cent.; with a mixture of 1 p. water and 7 p. alcohol, 76.67 to 76.88 per cent.; with 15 per cent. alcohol, 76.77 to 78.08 per cent. of dry extract.—Pharm. Ztg., l, No. 79 (1905), 836.

IRIDACÆ.

Crocus—Simple Method of Valuation.—G. Fromme recommends the following method for determining the quality of saffron:

a. Determination of Tinctorial Power: 0.3 Gm. of saffron, dried over sulphuric acid, is macerated in 300 Gm. of distilled water, under frequent shaking, for several hours. Of the solution so obtained, 1 Gm. should produce a distinctly yellow-colored liquid with 99 Gm. of water, whilst 0.1 Gm. should produce a pale, yet distinctly yellow liquid with the same quantity of water.

b. Determination of Moisture: A porcelain crucible filled to one-third with clean sand is heated to redness, transferred to an exsiccator, and weighed with its contents after half an hour; then 0.5 Gm. of the saffron are placed on the sand, and its weight having been confirmed by re-weighing, the crucible and contents are heated for about 1 hour at 100° C. in a drying-oven, placed into an exsiccator and again weighed after half an hour—the loss representing the moisture.

c. Determination of Ash: The crucible containing the saffron is next heated on a tripod in a small flame until the saffron is carbonized; the flame is removed and after partial cooling, the carbonized material is mixed with the sand by means of a silver or glass spatula being carefully brushed-off with a hair pencil into the crucible which is then heated to redness. The incineration is ended when the sand has assumed its original color, and this usually ensues without difficulty; if not, the crucible is allowed to cool, inclined so that about half of the bottom is exposed, and 5 to 10 drops of fuming nitric acid are dropped on the exposed surface. This is again covered by replacing the crucible in a vertical position and heat is applied, at first with a small flame, and finally with a strong flame to redness; after again cooling, a very small quantity of purest oxalic acid, in fine powder, is strewn upon the surface of the sand and the crucible and contents again heated to redness (this treatment assuring the conversion of any nitrates into carbonate). Then, after exposure for half an hour in the exsiccator, the ash is determined by weighing.—Pharm. Ztg., l, No. 73 (1905), 771: from Cæsar & Loretz's Report.

Saffron—Simple Method of Testing.—The following simple tests will suffice, according to H. Wippell Gadd and Sydney C. Gadd to establish the quality of saffron: One or two grains in ½-oz. of boiling water should give an intense orange-yellow color, and should yield no deposit. Fourteen grains should not yield more than one grain of ash. Each fragment of the drug should yield a deep transient blue color on touching strong sulphuric acid.—Pharm. Journ., Dec. 30, 1905, 902.

Saffron—Adulteration with Borax and Nitre.—R. Krzizan calls attention to an adulterated saffron yielding 32 per cent. of ash, composed mainly of borax and potassium nitrate in the proportion of 2 : 1 (calculated as anhydrous). The question may arise why borax alone is not used. It is well known that saffron will burn with more or less facility in the flame; if borax alone were used as weighting material its combustibility would be completely destroyed; hence the addition of nitre which restores its combustibility.—Pharm. Ztg., l, No. 79 (1905), 835; from Zeitschr. f. Unters. d-Nahrungsm., 1905, No. 4.

Saffron—Adulteration with Rochelle Salt.—J. Beddall Smith calls attention to an adulteration of saffron with Rochelle salt. The two samples examined yielded 74.5 per cent. of water extract and 32.2 per cent. of ash. The water extract gave the reactions for the tartrates of sodium and potassium; and the ash those of the carbonates of the same bases. Some potassium nitrate was also present. The samples in question were decidedly crisp in feel, but otherwise did not show any marked difference from an average sample. The author suggests that the saffron had evidently been soaked in a solution of the salts, but after drying had apparently been skilfully rinsed to wash away any superficial signs of sophistication.—Pharm. Journ., Dec. 23, 1905, 867.

ZINGIBERACEÆ.

Cambodia Cardamoms—Varieties.—The French Resident at Pursat, Cambodia, reports interestingly concerning the cultivation of cardamoms in the province of Purgat. Three sorts of cardamoms are distinguished in that region, all of them derived from wild plants, but these may also be cultivated, the sort most esteemed being known as *Kravanh.* This prefers soil rich in humus, and not too moist, flourishing best in creviced localities where the plants are protected from the direct influence of the sun; and in such may be successfully cultivated. The procedure is similar to that of planting potatoes, cuttings of the rootstock being planted at suitable intervals, and this is preferred to seeding, because an earlier crop of fruits is assured. Nevertheless, even this is protracted, no crop being produced before the end of four years. The plant flowers in April, the fruits ripen in August. A less desirable sort of cardamoms, known as *krako,* blooms in May and ripens in September. This variety is cultivated more readily than kravanh, from which the plant is distinguished by having imperfectly developed leaves, more roundish blossoms, and darker fruit capsules, which, similar to wild chestnuts, are covered with spines. After collection the fruits are dried in the sun and, to prevent germination, they are carefully exposed to additional drying on bamboo trays over hot coals. —Pharm. Ztg., li, No. 31 (1906), 352; from Bull. des Sc. Pharm., 1906, No. 2.

Ginger—Approximate Valuation.—H. Wippell Gadd and Sidney C. Gadd observe that the examination of powdered ginger is somewhat difficult, involving as it does microscopical work. Any ginger, however, which fails to pass the following tests should not be used for pharmaceutical purposes. (*a*) One hundred grains incinerated should yield a residue weighing not more than 5 grains, which transferred to a filter paper, washed with water and incinerated, should yield not more than 3½ grains.

of insoluble matter. (*b*) One hundred grains shaken repeatedly with 2 fl. ozs. of water for half an hour, the mixture set aside for two hours, and the supernatant liquid decanted on to a filter-paper, should yield a filtrate, 1 fl. oz. of which on evaporation to dryness should leave a residue weighing not less than 5 grains.—Pharm. Journ., Oct. 14, 1905, 520.

Turmeric.—Preparation of a sensitive reagent paper for *Boric Acid*, which see under "Inorganic Chemistry."

Zedoary—Derivation and Application of Name.—Referring to a specimen of zedoary root recently presented to the Museum of the Br. Pharm. Society, E. M. Holmes mentions that Dr. Stapf, in his monograph on the "Indian aconites" (which see), points out that the "Jaduar" of the Arabs and the "Zaduar" of the Persians probably gave rise to the name "Zedoary." The name jadvar, applied to a root which was highly prized in ancient times as an antidote to poisons, seems to have been applied to more than one kind of root, since Avicenna mentions a "melior zedoaria," which was regarded as an antidote to aconite root and other poisons, whilst the inferior zedoary of that writer appears to have been the root of *Curcuma zerumbet*, which is the ordinary zedoary root of the present day. This must, however, be regarded as a substitute for the true zedoary or jadvar, which on the authority of Garcia d'Orta, does not grow in India, but is brought from China, whilst "zerumbet" occurs abundantly in India. As the genuine zedoaria or jadvar rarely reached Europe, the name seems thus to have become fixed on its commoner substitute. The best kind of jadvar is still called in India "Jaduar Kathai," *i. e.*, Chinese jadvar. Dr. Stapf suggests that the jadvar resembles the root of *Aconitum heterophylloides*, Stapf, of Sikkim in a very high degree indeed, and points out that the vernacular name of the Nepaulese settlers for this species of *Aconitum* is "Nirbanshi," which reads very like a corruption of "Nirbishi," which, according to the late Dr. Dymock, of Bombay, is the Hindu name for jadvar. A specimen of true jadvar presented by the latter to the Museum of the British Pharm. Society, is considered by Dr. Stapf to agree well with the description of Jaduar kathai given in the "Supplement to the Indian Pharmacopœia. The roots are about 2 Cm. long by 1.8 broad, and have a sweetish taste almost free from bitterness.—Pharm. Journ., Dec. 16, 1905, 833.

ORCHIDEÆ.

Vanilla—Cultivation and Curing in the Seychelles.—From an account of inquiries pursued by F. R. Ellis, while on a visit to Mauritius concerning the vanilla industry, it appears that this is not in a flourishing condition on that island, because of the severe competition with the product of the Seychelles and Bourbon. In the Seychelles, on the other hand, vanilla-growers have suffered for several years from over-production, which in turn has brought about a collapse of prices. In this connection the author gives the following interesting particulars respecting vanilla cultivation in the Seychelles: To propagate the plant, a slip or cutting is obtained from a mother-vine, and planted aslant in the soil at a depth of four inches. This is now protected from the sun with dry grass. When the shoots begin to appear, three sticks (about six feet in height) are placed in camp fashion over them, around which they are twined. The flower appears during the second or third season, and the curing takes place in June, July and August. The work of fertilization or pollination of the flowers is all done by hand on the day they open. It is mostly done by women and children, and is a simple operation, the tongue of the plant being lifted up with a slip of wood and the anthers and stigma squeezed together between the forefinger and thumb. Early morning is the best time for fertilization, and an ordinary hand will do a hundred or so per hour. Only a small percentage of flowers fail to fecundate, and in this case they drop off in three days or less; but otherwise they remain attached to the stalk and slowly wither. The pods grow to their full size in five or six weeks, but take some eight months more or less, before they ripen. The indication of ripening is a slight yellowing of the whole pod. Great care is used in removing the pod from the flower-stalks, the pods being grasped one by one near their attached ends, very slightly twisted, and at the same time pressed aside with the thumb. They are gathered into baskets and sorted. There are many different methods of curing the pods for the market. Briefly, the baskets, containing perhaps 400 pods, are dipped into a cauldron of hot water—from 170° F. to 190° F.—for ten seconds (the temperature of the water has much to do with the successful curing of the vanilla). The dips are repeated twice, and after the third dip, when most of the water has drained off, the pods are placed in a wooden box or barrel lined with blankets. By the following day they have turned to a light brown chocolate color, and are then ready to spread on the drying-shelves in the open, during which time they become browner and browner. The drying is also continued in the curing-house, which is kept at a certain temperature, and the slower the process the more uniform and better is the result. When finished, the pods are well wiped with soft flannel, tied up in bundles of various sizes and placed in tin boxes holding about twelve pounds.—Chem. and Drugg., Oct. 7, 1905, 593.

THYMELEACEÆ.

Daphne Mezereon—Cultivation.—E. M. Holmes says that *Daphne mezereon* requires peat or leaf mould and loam, and needs plenty of moisture during the summer if the weather be dry, but the water used should not, if possible, touch the bark, as in such case it is likely to rot. There is a variety, *alba,* of the plant with white flowers and yellow berries, and another, *autumnalis,* which has rather larger leaves and flowers from October to January. Mezereon does well in the shade, although it will also flourish in the sun if the soil is not allowed to get very dry. The variety *autumnalis* does not usually ripen seeds, and must be propagated by cuttings of the young wood taken in April or May. The ordinary purple and white forms are easily propagated by burying the fruits an inch or so in the soil, and the young plants should be transplanted in the autumn. It is almost useless to attempt to transplant large bushes, as the new roots do not form rapidly enough to supply sufficient moisture. Another species,

Daphne Laureola, requires shade and a calcareous soil. It is best raised from seeds which can be obtained from the wild plants in chalky woods. It is apt to grow in a straggling manner unless cut back when in flower.— Pharm. Journ., July 1, 1905, 5.

LAURACEÆ.

Camphor—Historical Review, Source, Methods of Production and Purification, Commerce, etc.—Under the title of "The Camphor Tree and Its Products," A. Timberlake contributed a highly interesting paper, in which he reviews the history of camphor from the earliest authentic records, with particular reference to the commercial products derived from the camphor laurel, *Laurus camphorifera* Kamphfer (*Cinnamomum camphora* (Linné) Nees et Ebermaier), and incidentally also of the varieties known as Borneo camphor (from *Dryobalanops aromatica*) and N'Gai camphor (from *Blumea balsamifera* D. C.). The paper is of particular value as a compilation, covering, in addition to the historical data, the methods of producing the crude camphor and other products of the camphor tree, its purification and commerce, but can be profitably consulted only in the original in Proc. Indiana Pharm. Assoc., 1905, 95–101.

Camphor Trees—Unequal Distribution of Camphor.—Discussing a pamphlet by Davidson on the camphor industry of Formosa, it is stated in "Journ. d'Agriculture tropicale" (*5*, 1905, 351) that the camphor trees in Formosa appear to be much richer than those in Japan. In the fertile, damp soil of shady valleys the trees contain less camphor than even in bad soil in open, elevated situations. Trees rich in camphor are often found alongside of trees with a very low camphor-content. The distribution of the camphor in the branches, trunks and roots is unequal, and frequently more camphor is found in one particular side of the tree than in the other. Any one especially interested in this question finds in Davidson's pamphlet (L'Industrie du camphre à Formose. Imp., F. H. Schneider, Hanoy) information on the content of camphor and camphor oil in the various parts of the tree, based on studies of Professor Moriga, of Tokio.—Schimmel's Rep., April–May, 1906, 11.

Camphor Trees—Specimens Indigenous to California.—E. M. Kimberlin describes some camphor trees, supposed to be native of California, which were found near Lake Chabot, in the hills back of the town of Berkeley, Alameda county. Most of these trees range from twenty to thirty-five years of age, this being ascertained by counting the rings from the bark to the center of the tree. These trees resemble the characters of the *Cinnamomum camphora*, from which the official camphor is obtained. They are about twenty-five feet high, much branched, bark smooth, green leaves that are wide, narrowing toward both ends, and of a thick structure. The bark when freshly cut has the odor of sassafras; this is of importance, as the camphor, cinnamon and sassafras trees have been separated from the laurels by Nees and made the types of distinct genera, which have been adopted by most recent writers, and may be considered as well established. The trees are growing in a dark, adobe-like soil. The trunk of the tree drawn from the surface is of a cone shape, having many roots and rhizomes extending from the trunk, and the tree is well nourished in this way. The leaves have, when bruised, the odor of camphor, which is diffused through all parts of the plant. The leaves were found to yield about 15 per cent. of very pure camphor by distillation with water. The camphor of the wood and the rest of the tree was obtainable only by sublimation with a high heat, and was not so pure as that obtained from the leaves by distillation.—West. Drugg., Jan., 1906, 32–33.

Camphor Trees—Cultivation in Italy.—In a paper read before the recent Congress for Applied Chemistry at Rome, Giglioli states that the camphor tree may be cultivated and will flourish throughout Italy, except in the regions close to the Alps. He therefore suggests that the cultivation of these trees should be encouraged, since they make little demand on the quality of soil and give a good return, even the wood yielding about 0.1 per cent. of camphor, although of somewhat inferior quality. Moreover, the wood is well adapted for making furniture.—Pharm. Ztg., li, No. 47 (1906), 523; from Ztschr. f. angew Chem., 1906, No. 20.

Coto Bark—A New Kind.—O. Hesse directs attention to a new coto bark, which, like the genuine coto bark, is derived from the district of Reyes-Riveralta, in Bolivia, but while resembling the latter in its external characters, exhibits marked distinction in its chemical constituents, and particularly in that it does not contain a trace of coloin. The botanical source of the new bark is not given. It has an agreeably aromatic odor, which is apparently due to its content of the methyl ester of benzoic acid. Its most important constituent is a new body, to which the author has given the name

Cotellin.—This has a composition corresponding to the formula $C_{20}H_{20}O_6$, crystallizes in four-sided double pyramids, and melts at 169° C. It is tasteless, insoluble in water, but soluble in hot alcohol, acetone, and glacial acetic acid.—Pharm. Ztg., l. No. 80 (1905), 845; from Journ. f. prakt-Chem., 1905, No. 17.

Coto Bark—Qualitative Method of Examination.—G. Fromme recommends the following qualitative method for the examination of coto bark: 10 Gm. of the powdered bark and 100 Gm. of ether are shaken together frequently during one hour, the ether solution filtered, mixed with 50 Cc. of water, and the ether distilled off completely. After cooling, the residue in the flask is shaken with 30 Gm. of petroleum ether, the mixture of liquids transferred to a separatory-funnel, without regard to the resinous coating on the sides of the flask, and the aqueous layer filtered into a porcelain capsule and evaporated on a water-bath. The residual cotoin, dissolved in a little glacial acetic acid, must give a blood-red color on addition of a drop of fuming nitric acid.—Pharm. Ztg., l, No. 73, (1905), 770; from Ber. of Cæsar & Loretz.

MYRISTICACEÆ.

Bombay and Banda Mace—Simple Method of Distinction.—F. Utz, taking advantage of the observation of Pritchard that Bombay mace gives a red color with solution of sodium hydroxide, whilst Banda mace produces no color, recommends the following simple method of distinguishing the powders of the two sorts of mace. Strips of paper are dipped into the alkaline solution of the suspected powder, and dried. In the case of powdered Banda mace the paper remains perfectly colorless, while in the presence of Bombay mace the paper assumes a deep orange color, varying in intensity according to the proportion in admixture. It is claimed that as little as 5 per cent. of Bombay mace may thus be detected with certainty in Banda mace.—Pharm. Ztg., l, No. 80 (1905), 845; from Chem. Ztg., 1905, No. 75.

POLYGONACEÆ.

Polygonum Bistorta.—Active Constituents of the Root.—According to the investigations of L. F. Iljin the active constituents of bistort roots consist of a series of characteristic tannins which are quite distinct from ordinary tannin. The alcoholic extractive contains two tannins, which are separable from each other by their solubilities in ether-alcohol. They are both amorphous bodies, very soluble in water and in alcohol, and are rapidly absorbed by animal membrane from aqueous solutions, but communicating different colors. Their composition is $C_{38}H_{34}O_{18}$ and $C_{20}H_{20}O_9$ respectively, and they are also distinguished by certain reactions, in their cryoscopic properties and action on polarized light. Both tannins yield gallic acid and phloroglucin on melting them with caustic potassa, and pyrocatechin by dry distillation. On heating with diluted sulphuric acid, both yield amorphous products, insoluble in water, and some gallic acid, and both form compounds with phenylhydrazine. One of these tannins appears to be closely related to the tannin from the roots of *Potentilla tormentilla*, and in some of its reactions it resembles that of tannins from different oak barks; the other resembles very closely, or is identical with, the tannin of krameria root.—Pharm. Ztg., li, No. 31 (1906), 352; from Chem. Ztg., 1906, Rep. 5.

Rheum Rhaponticum.—Constituents.—A comprehensive chemical examination of the root of *Rheum Rhaponticum* by Tschirch and Cristofoletti has resulted in the determination of the following constituents; (1) a glucoside, rhapondicin (1.42 p. c.), which splits into rhapontigenin and d-glucose; (2) chrysophanic acid (chrysophanol) and its methyl ether; (3) tetrahydromethoxychrysophanol; (4) an anthraglucoside which yields tetrahydromethoxychrysophanol and d-glucose by hydrolysis; (5) rheum red; (6) rheonigrin. Neither emodin or rhein are contained in rhapontic rhubarb, which is evidently inferior to Chinese rhubarb.—Arch d. Pharm., *243*, No. 6 (1905), 443–457.

Rhubarb—Simple Test of Quality.—H. Wippell Gadd and Sidney C. Gadd recommend the test suggested by W. L. Howie in 1873 for the simple and efficient estimation of the quality of powdered rhubarb: Take a piece of white blotting-paper, about 3 in. square, and place it on a pill-tile. In one corner of this paper place about 5 grains of the sample to be tested, keeping the powder as much together in one heap as possible. Press it flat and smooth with the aid of a piece of paper, and drop carefully chloroform upon it, so that it may slowly percolate to the circumference, and extend nearly 1 in. beyond. Having allowed the paper to dry, it will be found that a yellow stain of varying intensity has been left around the powder. In East Indian rhubarb this stain is scarcely perceptible, but cheap dark samples may yield a brilliant yellow, whilst even the finest bright-colored English powder will give a yellow stain as deep as, and in most cases deeper than, the darkest East Indian. Should turmeric be present in quantity in any sample, it will at once give a brilliant yellow stain, in tint indistinguishable from that of the rhubarb, but which may readily be distinguished by the following method:

Place a minute pinch of powdered borax on that portion of the paper over which the chloroform has extended, and which probably has a yellow tint, choosing the deepest-colored part. With a glass rod deposit a single drop of hydrochloric acid on the borax. If turmeric be present, a definite red will be produced in a few seconds, changing to black or greenish-black on addition of solution of potash. If, on the other hand, the sample is genuine unsophisticated rhubarb, the only change will be a slight bleaching of the yellow color.—Pharm. Journ., Oct. 14, 1905, 520.

Rhubarb—Colorimetric Estimation.—G. Fromme recommends in addition to the tests of the G. P., IV., for determining the quality of rhubarb, the application of the colorimetric method of estimation devised by Tschirch, which he carries out as follows: 0.5 Gm. of finely powdered rhubarb and 50 Cc. of 5 per cent. sulphuric acid are boiled together under a reflux condenser for 15 minutes, the mixture is allowed to cool, and without previous filtration, is shaken out with ether in portions of 50 Cc. at a time until the ether remains colorless, and does not communicate a red color to a dilute solution of potassium hydrate. The residual aqueous liquid is then again boiled for a quarter of an hour under a reflux condenser, as before, and again shaken out with repeated portions of 50 Cc. each of ether. The several portions of ether solution are then united and shaken out with 200 Gm. of 5 per cent. potassium hydrate solution, as long as the latter acquires a red color. The united alkaline solutions are then brought to the volume of 500 Cc., and 100 Cc. of this solution is diluted to 1000 Cc. If then 350 Cc. of this diluted solution is further diluted to 1000 Cc. in a liter flask, and this placed on white paper, the solution should have a distinct cherry-red color, this color corresponding to that of an aloe-emodin solution 1 : 1,000,000. By comparing the dilutions obtained in this way with those of known strength, it is quite possible to determine the percentage of oxymethylanthraquinone in the sample, which in rhubarb of good quality, ranges from 2.8 to 4.0 per cent.—Pharm. Ztg., l, No. 73 (1905), 772 ; from Cæsar & Loretz's Report.

SCROPHULARIACEÆ.

Digitalis—Cultivation.—E. M. Holmes states that foxglove grows best in well-drained, loose soil rich in leaf-mould, but it does not grow in calcareous soil. If found on the chalk it will be invariably found to grow in pockets of yellow clay or on clayey soil lying on the chalk. It will grow either in shade or in sun, but prefers a moderate amount of sun. Although naturally a biennial, after flowering young shoots will sometimes develop between the radical leaves and form three or four flowering stems during the third year. In suitable soil it readily renews itself by seed. There is a curious, monstrous form of the flower, occasionally found wild, in which the terminal flower assumes a shape resembling a large Canterbury bell flower, due to the development of two or more flowers on the same peduncle. This form can be reproduced from seed, and is probably obtainable from Messrs. Thompson and Morgan, seedsmen, of Ipswich. In drying this plant it is very necessary to use the paper hot from the drying-cupboard and to change it every hour or two, otherwise the fleshy filaments of the stamens destroy the color of the flowers.—Pharm. Journ., July 1, 1905, 5.

Digitalis Leaves—Characters of Distinction from Adulterants Likely to be Present in the Powder.—C. Hartwich and P. Bohny have communicated the results of a comprehensive study of digitalis leaves, in which they describe and show in illustration the characteristic elements of the leaves of different species of *Digitalis* (*D. purpurea*, *D. ambigua*, *D. lutea*, and *D. parviflora*), and of the leaves of plants likely to be found as adulterants, particularly of the powder. The latter includes different species of *Verbascum*, belonging to the Scrophulariaceæ : the Labiates, *Tenerium scoro-*

dania, L., and *Salvia starea*, L.; *Symphytum officinale*, L. (N. O. Borraginaceæ); *Solanum tuberosum*, L., and *S. nigrum*, L.; *Æthœa officinalis*, L.; *Citrus aurantium*, L.; *Inula conyza*, D. C., and *I. helenium*, L.; *Arnica montana*, L.; and *Artemisia vulgaris*, L. Distinctive elements are found: 1. In the transparent fine nervation of certain leaves. 2. In the form and structure of the hairs. 3. In the occurrence and form of calcium oxalates. 4. In the occurrence of calcium carbonate. 5. In the silicification of the hairs. 6. In the occurrence of fibrin. The details of these highly interesting and valuable studies must be consulted in the original in Apoth. Ztg.. xxi, Nos. 25–29 (1906), 242, 252, 267 and 276.

SOLANACEÆ.

Belladonna Root—Question of Standardization and Percentage of Alkaloid.—Referring to the proposed adoption of a standard of 0.4 per cent. alkaloid for belladonna root in the B. P., H. John Henderson sounds a note of warning and advises that great caution be exercised in adopting a standard of alkaloid for roots and leaves. Plants do not grow alkaloid to order, and discretion is necessary lest a hasty opinion be drawn from insufficient data. Suppose that the authorities adopt such a standard as shall require that the belladonna root used for the galenical preparations shall contain not less than 0.4 per cent. alkaloid, then it follows that a maximum must be adopted, else the main object would be defeated, the idea presumably being to obtain a certain uniformity in the appearance of the finished article. There is a good deal to be said in favor of this, but one begins to wonder where it is all going to end, certainly not in the retail pharmacist making his own preparations. To the manufacturer it is no unsurmountable difficulty to match a standard liquid extract if he is allowed to juggle with a strong and weak extract, but jugglery is not pharmacy. Let it be possible for the pharmacist to buy sound root and from it make his preparations in a straightforward manner; he cannot afford to assay every small parcel of root he buys, and it is not necessary that he should do so. The author gives experimental figures, based upon large parcels of drugs (from 800 to 900 pounds in each case), which show conclusively that there is not alone great variation in the percentage of alkaloid in belladonna root, but also that there is no definite relation between the percentages of alkaloid and extract contained in them. Nor can any reliance be placed on the external appearance of a root, for fine, handsome, starchy roots, usually considered rich in alkaloid, have been found woefully deficient, while far less presentable roots have been found greatly superior. The author cites examples of roots containing as little as 0.066 and 0.08 per cent. of total alkaloid, and mentions that there have been prolonged periods when it was impossible to obtain roots containing even 0.3 per cent., not to speak of 0.4 per cent., the proposed standard. The following figures represent the recent estimation of thirty samples of foreign root, and speak for themselves: 0.24, 0.21, 0.282, 0.14, 0.128, 0.176, 0.28, 0.442, 0.116, 0.214, 0.324, 0.34, 0.386, 0.147, 0.15, 0.378, 0.15, 0.212, 0.272, 0.292, 0.48, 0.287, 0.545, 0.506, 0.373, 0.466, 0.46, 0.258, 0.43, 0.338.—Pharm. Journ., Aug. 5, 1905, 191.

Capsicum—Proper Solvent for Making Pharmaceutical Preparations.—A. W. Gerrard records the results of experiments undertaken for the purpose of determining the best all-round solvent of the active principles of capsicum, with the view of obtaining an extract representing its full activity, and of such a nature as to be suitable for the manufacture of other capsicum galenicals. By percolating the drug with different solvents under identical conditions, the following percentages of extract were obtained:

Ether	18.2
Alcohol, 90 per cent.	26.4
Benzin	18.6
Petroleum ether	16.4
Bisulphide of carbon	16.7
Chloroform	17.5

All the extracts, on standing twenty-four hours, deposited fat, and separated a dark-red fluid resin. The fat yielded from the carbon bisulphide was hard and somewhat crystalline, and the resinous portion of the percolate contained numerous small floating crystals. The palest-colored extract was obtained by petroleum ether, which solvent does not readily remove the color from capsicum. To test whether the extract retained in the pungent residues was worth recovery, the dried marcs (except the alcohol one) were each percolated with 90 per cent. alcohol until 100 Cc. had been collected; on evaporation of the alcohol there was obtained in each case a brown, resinous, strongly pungent residue, in the following proportions:

From the ether marc	7.9 per cent.
Benzin	7.5 per cent.
Petroleum ether	9.0 per cent.
Bisulphide of carbon	7.2 per cent.
Chloroform	7.4 per cent.

By adding these figures to the previously obtained figures under their proper solvents, we get approximately the same amount of extract as when alcohol alone is employed. The unmistakable lesson, then, of these experiments is to show that alcohol is the most powerful and perfect solvent of the drug capsicum. The conclusion thus arrived at will come, no doubt, as a surprise to many who have long been taught to regard ether as the perfection of solvents for the drug; and in the basis of these observations the author recommends the preparation of a "concentrated liquid extract" (which see under "Pharmacy"), from which the other preparations may be made.—Trans. Brit. Pharm. Conf. (Yearbook of Pharm.), 1905, 451–456.

Datura Alba, Nees—Alkaloidal Constituents of the Seeds.—In 1892, J. Shimoyama and F. Koshima (see Proceedings, 1893, 703), obtained from the seeds of *Datura alba*, growing wild in the province of Chilo, 0.041 per cent. of hyoscyamine and a quantity of atropine corresponding to scarcely 0.005 per cent. of auro-chloride. Browne had previously obtained from the flowers of this plant indigenous to China, 0.485 per cent. of scopolamine, and Hesse as much as 0.51 per cent. Prof. Ernst Schmidt has now had the opportunity to determine the alkaloid in two specimens of the seeds of *Datura fastuosa*, a plant regarded by Dragendorff and other authors as being identical with *D. alba*. These seeds, while not distinguishable from each other by their external character, were supplied under the designations *D. fastuosa, flor. alb. plen.*, and *D. fastuosa, flor. cærul. plen.* respectively. The first-named yielded 0.20 per cent. scopolamine and 0.023 per cent. hyoscyamine, the blue-flowering variety yielded 0.216 per cent. scopolamine and 0.034 per cent. of hyoscyamine.—Apoth. Ztg., xx, No. 67 (1905), 669.

Datura Stramonium—Distribution of Alkaloid in the Various Organs.—J. Feldhaus communicates the results of a systematic investigation of the distribution of the alkaloid in the various organs of *Datura Stramonium*. The localization of the alkaloid was effected by means of iodine—potassium iodide solution, and the assays were made by the official G. P. method, using ether-chloroform (3 to 1) for the shaking-out process, solution of sodium hydroxide (10 per cent.) as alkali, and iodeosin as indicator. In the *seeds*, the alkaloid was restricted to the obliterated layer between the endosperm and the epidermis—these two and the embryo being free from it. The percentage of alkaloid in quite small and unripe seeds, was 0.33 per cent.; full grown, but unripe, 0.54 per cent.; full grown, nearly ripe, 0.47 per cent.; full ripe seeds, 0.48 per cent. In the main *stem* the alkaloid resides chiefly in the cortex, the wood and pith containing only small quantities; but the younger branches contain it most abundantly, the youngest containing 0.36 per cent., whereas the main stem yielded only 0.09 per cent. The main *root* contained 0.098 per cent., the branch roots 0.24 per cent. In the leaves, which contained a total of 0.39 per cent. of alkaloid, the laminary tissues were found to contain 0.48 per cent., the petioles 0.69 per cent., and the midrib 1.39 per cent.—Arch. d. Pharm., *243*, No. 5 (1905), 328–348.

Stramonium Leaves—Yield of Extract with Different Solvents.—Operating on stramonium leaves, of handsome quality and fully conforming to the requirement of the G. P. IV. K. Dietrich obtained by extraction with alcohol (90 per cent.) 8.88 to 9.13 per cent. of extract, dried at 100° C., and with alcohol and ammonia 9.55 to 9.62 per cent. By extracting the leaves from the same parcel with cold water, 29.68–30.06 per cent. of extract, dried at 100° C. was obtained, while hot water yielded a little less —namely 28.4–29.04 per cent.—Pharm. Ztg., l, No. 64 (1905), 672; from Helfenberger Annalen.

OLEACEÆ.

Jasmins—Isolation of Two New Glucosides.—E. Bourquelot announces that in conjunction with Vintilesco he has isolated a new glucoside from the green shoots of *Jasminum nudiflorum*, to which the name

Jasmiflorin has been given. The new glucoside is detro-rotatory and is hydrolyzed by emulsin and by dilute acids. Almost simultaneously Schlagdenhauffen and Reeb publish the details of isolation of a new glucoside from the leaves of *Jasminum fructicans*, which they have named

Jasminin.—This was obtained from the alcoholic extract of the dried leaves, after removing other bodies by precipitation first with neutral, then with basic lead acetate and eliminating excess of lead with sodium carbonate, and evaporating, repurifying the glucoside by means of alcohol, 95 per cent. Jasminin is a yellow, amorphous, resinoid body; it is hydrolysed by dilute acid into glucose, and a white, amorphous decomposition-product jasminein. Jasminin, as far as examined, does not appear to have any marked toxic action on the frog's heart.—Pharm. Journ., April 7, 1906, 409; from Journ. de Pharm. et Chim., 1906, *23*, 305, and L'Union Pharm., 1906, 47, 49.

Olive Oil—Adulteration and "Blending" at Nice.—As the result of a controversy between two local papers, "Le Petit Var," of Toulon, and "L 'Eclaireur," of Nice, some very interesting facts have come to light respecting the adulteration of olive oil in the very districts reputed to be the home of this industry. The region of Nice is celebrated for the quality of its oil, and although there is exported annually from this center something like six million liters, it is a fact that in the town of Nice itself it is comparatively difficult to get an oil which is unsophisticated, and this adulteration, which has been going on for years, culminated last April, when the Syndicate of Grocers brought an action in the Tribunal Correctionelle de la Seine against certain firms for fraud. It appears that the principal center of adulteration is a small town called Salon, situated between Marseilles and Avignon, at about fifty kilometers from the first-named town, and from here the various adulterated oils are forwarded to all parts of France, and also abroad. In spite of all the protests, however, made in the controversy above mentioned, there is at Nice a great deal of blending of various qualities of olive oil. Oils arrive in the harbor from various parts of the world. Large quantities come from Algiers and Tunis, from Spain and Italy. These are cheaper qualities, and have distinct characters and tastes, but are used to mix with various qualities of oil produced in the district in order to modify their flavor or appearance, and to diminish the cost. It frequently happens that an old oil, perfectly sweet and good, is improved by the addition of a young or green oil to pick up its flavor and give it more tone and body. This *coupage* corresponds to what is done in the wine trade, and is quite legal, although the product resulting from such an operation can scarcely be described as "pure olive oil from Nice," seeing that it is a mixture of Nice oil with cheaper kinds. The blending of seed oils with olive oil is done before the oils have fined down. Both are mixed in a turbid state, and after remaining in the earthenware vats to clear down, the oil so adulterated is pumped up into the "pile," as it is called, and the product is then filtered through cotton wool in the usual way, the result being an oil of a particularly bright and attractive color and appearance, but by no means what is generally known as "huile vierge de Nice."—Chem. & Drugg., Aug. 19, 1905, 349.

LABIATÆ.

Lavandula Vera—Cultivation.—According to E. M. Holmes, lavender is not very particular as to soil, but does well on chalk or limestone, and prefers a sunny aspect. The one thing essential is good drainage. The plant becomes woody and straggling in a few years, unless pruned every year, so that it is desirable every two or three years to renew it either by dividing the plants or inserting shoots with a woody base in the soil in early spring. These, if well watered, root readily, especially if kept under a handlight for two or three weeks. There are two or three forms of the plant which are readily distinguished at sight in a lavender field, some more compact and with narrower leaves, some with a dense inflorescence, and others with the whorls some distance apart. The latter are said to have a sweeter perfume, but the character of the perfume probably depends more upon the soil and aspect and mode of distillation than upon the variety of the plant, since growers state that they can distinguish the distillates obtained from different fields.—Pharm. Journ., July 1, 1905, 5.

Mentha Piperita—Cultivation.—E. M. Holmes observes that peppermint (*Mentha piperita*) grows naturally by the sides of streams and sometimes even with its roots in water. There are two wild forms, the one, *a-officinalis*, has oblong lanceolate leaves, rounded at the base, and a slender inflorescence; the other, *β-vulgaris*, has leaves broader and cordate at the base having a more ovate outline and a shorter and less tapering inflorescence. In cultivation there are varieties known as white and black peppermint, the former having green and the latter purplish stems, but both have leaves like those of the *officinalis* variety. If allowed to get dry in the summer or to become too crowded in growth it is apt to develop a yellow fungus (*Puccinia menthæ*, Pers.) on the undersides of the leaves. In spite of the biting taste it is readily attacked by caterpillars, so that if flowering specimens of the plant are required for drying purposes it is necessary to watch the plant closely in August when in flower.

Mentha Viridis also requires a damp soil, but less so than *M. piperita*, and is subject to the same fungus under the same conditions. Lest the one plant should be gathered for household use in mistake, it may be pointed out that in *M. viridis* the leaves are sessile, but stalked in *M. piperita*.—Pharm. Journ., July 1, 1905, 5.

Peppermint—Modification of the Plant Caused by a Mite.—In the *Bulletin* of Roure Bertrand Fils (Oct., 1905, pp. 1–18) it is mentioned that in the peppermint cultivated around Grasse a peculiar form of the plant occurs, known by the name of *Menthe basiliquée*, on account of its resemblance to sweet basil (*Ocymum basilicum*, Linn.) after the flowers have fallen. The leaves, instead of being stalked, as is usual in peppermint, become sessile, and the pinnate character of the veins is altered in consequence into a palmate arrangement at the base of the leaf, although intermediate leaves can be found showing the transition from one form to another. The leaves also almost lose their serrate character. The flowers are not developed, but the bractlets are increased in size at their expense, and the stem also approaches the cylindrical form instead of being quite square. There are also differences in the structure of the leaf, the palisade cells being reduced to about half their size, so that the leaves are thinner. These changes are brought about by a mite, which has been named *Eriophyes menthæ* by B. M. Molliard. It is nearly allied to *E. Thomasi*, Nalepa, which lives on *Thymus serpyllum*, and of which some authors might regard it as a sub-species. The other species which feed on mint, viz., *E. mentharius*, Can., on *Mentha silvestris*, and *E. megaceras*, Can. and Massala, on *Mentha aquatica*, differ in having terminal feather bristles to their legs with four pairs of rays instead of five, as in *E. menthæ*. As a noteworthy result, it has been recorded by Charabot that the essential oil produced in these modified plants is more abundant but of poorer quality, and the menthone content is lower, being only 3 instead of 10 per cent. This is accounted for by the fact that menthone is principally produced in the inflorescence. These remarkable results led to a further investigation concerning the effect of suppressing the inflorescence, and experiments were made on the effect of removing it before it was fully developed. In the case of *Ocymum basilicum* it was found that owing to the suppression of the inflorescence the weight of oil produced by each plant is almost doubled. The absolute weight of essential oil which remains in the green portion of each plant is increased, but it is not in proportion to the development of the green organs. The increase in the weight of the plant amounted to 39 per cent. of the normal weight, and the increase of essential oil to 8 per cent. by weight of the normal production.—Pharm. Journ., June 16, 1906, 706.

Mentha Pulegium—Cultivation.—E. M. Holmes finds that pennyroyal (*Mentha pulegium*) is a much more difficult plant to cultivate than either

Mentha piperita or *M. viridis* (which see). It grows naturally in wet places, on grassy commons, or near the base of hilly fields, where the soil near the base of the hill is always damp. When grown in the open, especially in a light soil, it is very apt to die off in the winter. There are two forms of this plant, the one with a creeping, the other with a direct stem. The latter stands drought better, and appears to be the form generally cultivated by herb-growers.—Pharm Journ., July 1, 1905, 5.

Orthosiphonis Staminci—A New Diuretic Remedy.—Caesar & Loretz call attention to the remedial value of the leaves of *Orthosiphonis staminci*, a labiate indigenous to East India, Java and Australia, the leaves of which are known as "Java tea." It has proven effective in gout, affections of the bladder, and kidney gravel. Chemically, the leaves are characterized by containing glucoside, orthosiphonin, and small quantities of volatile oil.—Pharm. Ztg., l, No. 74 (1905), 782.

Rosmarinus Officinalis—Cultivation.—E. M. Holmes states that rosemary, like lavender (which see), prefers a calcareous soil and good drainage. It is apt to be killed by severe frosts in winter, especially when it becomes large and woody. It is best grown near a south wall and in the sun, and it is well to take a cutting or two every year in April, so as to have young plants to fall back upon.—Pharm. Journ., July 1, 1905, 5.

CONVOLVULACEÆ.

Dichondra Brevifolia—A Remedy for Diphtheria. According to Aramian an extract prepared from the seeds and stems of *Dichondra brevifolia* has proven useful as a remedy in diphtheria. The thick extract (process of preparation not given) is dissolved in three parts of glycerin, and this solution is applied with the aid of a cotton-probang to the diphtheritic membrane, repeating the application every 2 to 6 hours, according to the seriousness of the case.—Pharm. Ztg., l, No. 52 (1905), 552; from L'Union Pharm., 1905, No. 6.

Jalap—Simple Directions for Assay.—H. Wippell Gadd and Sidney C. Gadd recommend the following simple method for the assay of jalap: Digest 100 grains of the powdered drug in ½ oz. of rectified spirit in a 2-oz. stoppered bottle in a warm place for 24 hours. Transfer to a filter-paper, and wash with rectified spirit until the washings are colorless and leave no residue on the evaporation of one drop. Place the filtrate in an open dish over a water-bath, add ¼ oz. of distilled water, and heat until all the spirit is dissipated. Allow the residue to become cool, pour off the supernatant fluid from the deposited resin. Wash the resin two or three times with hot distilled water. Dry in a water-oven. Weigh. The weight should not be less than 9 or more than 11 grains. If 110 minims of

Tincture of Jalap, B. P., are treated in the same way, the yield should be 1½ grains of resin.—Pharm. Journ., Sept. 30, 1905, 438.

Jalap—Method of Assay.—G. Fromme boils 7 Gm. of powdered jalap with 70 Gm. of absolute alcohol for two hours under a reflux condenser, restores the original weight of the mixture by adding absolute alcohol after cooling, and filters off 51 Gm. of the tincture into a tared porcelain dish. After adding a few grammes of water, the alcohol is evaporated, the dish is half filled with hot water, and the separated resin well kneaded with a glass rod, so as to form a coherent mass which, after twice washing with hot water in the same way, is dried on a water-bath at 100° C., and finally in the exsiccator for half an hour to constant weight. The ascertained weight, multiplied by 20, gives the percentage of resin in the sample.—Pharm. Ztg., l. No. 73 (1905), 773: from Caesar & Loretz's Report.

Scammony—Culture Experiments in France.—In England the cultivation of the scammony plant is not easy. It does not thrive in a pot, and in the open air it may last through a mild winter or two, but succumbs to hard frost. At Kew and at the Royal Botanic Gardens at Regent's Park, and at the Chelsea Gardens, where it has flowered in former years, it is no longer to be found, and as the plant does not readily produce fertile seeds it is not easily replaced, except by seeds directly from the East of Europe. Demilly now states that in the gardens of the Ecole Superieure de Pharmacie de Paris it has recently flowered from seeds brought from Syria, and an excellent illustration is given of the plant in a flourishing and flowering condition as grown in that garden. It is stated as the result of experience that if the plant grown in the open air be covered at the first sign of frost with a fine covering of dried leaves, so that neither moisture nor frost can penetrate to it, and the covering be removed in May, the plant will live uninjured through the winter and spring, and when uncovered in May the young shoots will be found to be already starting into growth.—Pharm. Journ., Jan. 20, 1906, 65; from Bull. des Scien. Pharmacol., xii, 297.

Scammony Root—Saccharose a Variable Constituent in the Dry and Fresh Root.—P. Requier has found that fresh scammony root contains nearly twice as much saccharose as the dry. Dried commercial scammony root was found to contain 3.36 per cent. of saccharose, as well as reducing sugar. Experiments with the fresh root carefully sent from Smyrna packed in its native earth show that it contains 1.872 per cent., or calculated on the dry root, 6.802 per cent.—Pharm. Journ., Dec. 23, 1905, 869; from Journ. de Pharm. et Chim., 1905, *22*, 435 and 492.

GENTIANACEÆ.

Gentian—Investigation of Proximate Constituents.—G. Tanret has made a comprehensive investigation of the proximate constituents of gentian, obtained by diluting the alcoholic extract of the fresh roots with alcohol and extracting the mixture with an equal weight of warm hydrous ether. The ethereal extraction so obtained yielded on evaporation a syrupy residue, which on drying in the air congealed to a crystalline mass, this yielding on recrystallization from hot alcohol, gentiopicrin, containing as impurity about 1 per cent. of gentiin. On recrystallizing this impure product with acetic ether containing 2 per cent. of water perfectly pure gentiopicrin was obtained.

Gentiopicrin, $C_{16}H_{20}O_9$, crystallizes from alcohol in the anhydrous condition, m. p. 191° C., and from water with ½ mol. H_2O, m. p. 122° C. By hydrolysis it yields glucose and

Gentiogenin, $C_{10}H_{10}O_4$, in the form of a white crystalline mass.

Gentiin, $C_{25}H_{28}O_{14}$, is a more difficultly soluble glucoside. It crystallizes from hot 60 per cent. alcohol in yellow needles, m. p. 274° C., which are nearly insoluble in cold water, and is characterized by producing a black-green color with ferric chloride, and by dissolving in concentrated nitric acid with a green color. By prolonged heating with 4 per cent. sulphuric acid, gentiin is split up into glucose, *xylose* and

Gentienin, $C_{14}H_{10}O_5$, and it is the first glucoside yielding *xylose* as a product of its hydrolysis.—Pharm. Ztg., l, No. 80 (Oct. 7, 1905), 845; from Chem. Centralbl., 1905, ii, No. 10.

Gentian—Yield of Extract with Different Solvents.—According to "Helfenberger Annalen," gentian root, examined during 1904, gave the following percentages of extract, dried at 100° C., under the conditions indicated: By infusing 1 part of the coarsely powdered drug in 10 parts of cold water, with frequent agitation during 24 hours, expression, filtration and evaporation, 32.94 to 39.82 per cent.; from fine powder, in the same way, 35.25 to 35.42 per cent.; by infusion with boiling water, allowing to stand 2 hours, then heating on a boiling water-bath for 15 minutes with frequent agitation, allowing to stand 24 hours, expressing, etc., coarse powder yielded 40.19 to 41.22 per cent.; fine powder, 38.68 to 38.91 per cent. of dry extract. By macerating the drug in the same proportions during 24 hours with diluted alcohol (equal parts of alcohol and water), coarse powder yielded 38.57 to 41.3 per cent.; fine powder, 40.3 per cent.; while with diluted alcohol (G. P. = 68 per cent.) the coarse powder yielded 36.32 to 39.31 per cent. and the fine powder 39.1 per cent. of dry extract.—Pharm. Ztg., l, No. 79 (1905), 836.

APOCYNACEÆ.

Indo-Chinese Apocynaceæ.—Useful Description of a Number of Species.—In a thesis presented by C. Spire for the degree of Doctor of Sciences, a number of apocynaceous plants are described, and excellent illustrations of their form and anatomical structure are given. Some of these are of especial interest, since they furnish the chief supply of india-rubber from French Indo-China, particularly the species of the genus *Parabarium*. Of this genus the species illustrated are: *P. Tournierii*, *P. latifolium*, *P.*

Spruceanum, and *P. Quintaretii*, Pierre. The first-named yields a black india-rubber. The other plants illustrated are: *Parameria glandulifera*, Benth., which is used for medicinal purposes in China and the Philippines; *Agonerion polymorphum*, Pierre; *Microchœte Jacqueti*, Pierre; *Xylinabaria Reynaudi* and *X. Spirei*, Pierre; *Chonemorpha Grandieriana* and *C. megacalyx*, Pierre; and *C. Griffithii*, Hook. These descriptions form a useful contribution to the botany of Indo-China. A careful study of the laticiferous vessels of the plants by the same author indicates that there are two systems of vessels, one generally distributed throughout the tissues, and the other localized in the mesocarp, and that there are cells filled with gum in the cortical and medullary tissue of a number of the species. In some cases the gelification extends to the neighboring cells, and these thus present the appearance in transverse section of the secretory canals of the Sterculiaceæ. The method adopted to put in evidence the gummy elements was by fixation with alcohol (60 per cent.), and coloring with Delafield's hæmatoxylin dissolved in a mixture of equal parts of glycerin, alcohol, and water. The best reagent to show up the laticiferous vessels was found to be a solution made as follows: Soudan III. (amido-azobenzene-azo β-naphthol), 0.25 Gm., dissolved in 5 Cc. of crystallized acetic acid, heating to boiling-point, and after cooling, adding to the mixture 100 Cc. of alcohol (90 per cent.), filtering the solution after standing twenty-four hours. The micro-section is left two to ten minutes in this solution and then washed in acetic alcohol and mounted in glycerin gelatin. The laticiferous vessels show a red color, resembling that of dragons' blood.—Pharm. Journ., July 29, 1905, 116; from Trav. du Labor. de Mat. Med. de l'Ecole Sup. de Paris, 1905, iv, 1–181.

Alstonia Costulata—Cholestrols from the Dried Latex.—Sack and Tollens subjected the dried milky juice of *Alstonia costulata* (*Dryera costulata*), a sort of gutta percha from Borneo, known by the native name of "bresk," to chemical examination, and isolated three crystalline bodies from it, which are closely allied to cholestrol, viz.:

1. *Alstol*, $C_{24}H_{38}O$, which crystallizes from ether in small colorless needles, melting at 158°; insoluble in water, alcohol, dilute acid or alkalies, but readily soluble in organic solvents. It forms a dibromo addition product, $C_{24}H_{3}OBr_{2}$, which forms yellow leaflets.

2. *Alstonin*, $C_{24}H_{22}O$, crystallizes in long needles grouped in bundles. It is dextro-rotatory, and melts at 191°–192°.

3. *Iso-alstonin*, $C_{24}H_{22}O$, a body crystallizing in small tablets, also dextorotatory, but melting at 163°.—Pharm. Journ., Aug. 19, 1905, 251; from Ber. d. D. Chem. Ges., *37*, 4110.

Nux Vomica—Percentage and Quality of Fat in the Seeds and Hairs.—In continuation of his experiments on the distribution of fats and strychnine in nux vomica made last year with his brother (see Proceedings, 1905, 634), Sydney C. Gadd reports results of experiments on the fat and its character in the decorticated seeds and in the hairs and skin, from which it appears that the fat in the seeds and skin is acid in its character, whilst that of the hair is neutral. Two samples of decorticated seeds yielded 3.52 and 3.9 per cent. of fat, 1 Gm. of which required respectively 3.4 and 3.0 Cc. of $\frac{N}{10}$ NaOH solution. The hairs from the seeds yielded from 10 to 15 per cent. of fat, which was neutral. Hairs and skins yielded 3.33 per cent. of fat, 1 Gm. of which required 0.18 Cc. of $\frac{N}{10}$ NaOH solution. Similar results were obtained in the case of fats contained and obtained from liquid extracts prepared from decorticated seeds and from the hairs and skins, viz.: that from the decorticated seeds (0.62 per cent. fat) required 3.2 Cc., from hairs and skins (1.84 per cent. fat) 0.16 Cc., and that from whole seeds (0.83 per cent. fat), required 3.4 Cc., $\frac{N}{10}$ NaOH solution to neutralize 1 Gm.—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy) 1905, 470.

Strophanthus Dichotomus, D. C., and Other Species—Glucosidal Constituents.—W. G. Boorsma states that the seeds of *Strophanthus dichotomus*, and also of *S. longicaudatus*, Wight, and *S. caudatus*, var. *undulata*, Franch., have been found to contain a strophanthin-like glucoside, which was not obtained in a pure state. The glucoside of all three species gave the same chemical reaction with sulphuric acid. The glucoside dissolves in strong sulphuric acid with a brown color, which turns to a dirty green when the solution is diluted with water. With sulphuric acid diluted with 20 to 30 parts of water it gave a fine rose-colored solution, which subsequently changed to blue, and ultimately to a grey turbidity. A concentrated watery solution gave, when gently shaken with sulphuric acid, a purple color. Thin slices of the seeds examined under the microscope in strong sulphuric acid showed a greenish color in both embryo and endosperm, which soon became of a rose color, and then disappeared after a time, due to carbonization of the tissues. If the diluted sulphuric acid is used the rose color is very persistent.—Pharm. Journ., Dec. 9, 1905, 794; from Bull. de l'Instit. Bot. de Buitenzorg, xxi, 30.

Strophanthus Kombe—Importation of Reliable Quality.—E. M. Holmes, in a review of the commercial history of strophanthus, explains his efforts to secure a uniformly reliable commercial supply of strophanthus seeds, known as the Kombe variety, at first supposed to be derived from *Strophanthus hispidus*, but now assigned to a distinct species, *Strophanthus Kombe*, Olio. After many fruitless efforts, he found that the pods that have been submitted to him by the African Lakes Co., who undertook to assure the supply of the genuine drug since 1903, have been genuine Kombe only, as are also the seeds which are now imported freed from the pods by the London firm to whom the African Lakes Co. has relinquished this branch of their business. These seeds are now coming over pure and unmixed.—Pharm. Journ., Mar. 17, 1906, 312–314.

Strophanthus Kombe—Criticism of Sulphuric Acid Test.—G. Weigel has found during an experience of a number of years in the examination of strophanthus seeds that the color-reaction with sulphuric acid prescribed by the G. P., IV—blue-green, followed by red—does not develop in all the seeds, and that as a rule about one-half of the seeds in a sample under examination fail to respond to this requirement. Seeds of the same parcel, to all appearance identical in their external characters with those giving the required green reaction, develop, instead of the latter, gradually a brown-reddish to violet color.—Pharm. Centralh., xlvii, No. 49 (Dec. 7, 1905), 922.

Referring to the preceding criticism of Weigel, Caesar and Loretz, in their Jahresbericht (Jan., 1906), insist on the importance and value of the sulphuric acid test as a criterion in determining the source of strophanthus seed. Seeds which do not respond to this test should be rejected. In the experience of this firm the test is best carried out as follows: About 20 of the seeds are soaked in water for 10 to 20 minutes, the whitish kernel is removed from the seed-coat and placed upon a glass or porcelain plate. If it is then touched with sulphuric acid the kernel of the genuine Kombe seed will assume a distinct green color *in a short time*, which does *not* afterwards change to red.—Pharm. Ztg., li, No. 9 (1906), 98.

Strophanthus Seeds—Qualitative and Quantitative Examination.—G. Fromme recommends the following method for the examination of strophanthus seeds, qualitatively and quantitatively:

a. Qualitative: About 20 seeds are soaked in cold water for half an hour, the endosperms are removed from the hulls, placed upon a porcelain plate and each one is moistened with a drop of sulphuric acid, which must develop into a green color.

b. Quantitative: 7 Gm. of the finely crushed seeds are placed in a flask with 70 Gm. of absolute alcohol and, the gross weight of the flask and contents having been ascertained, boiled under a reflux condenser for 1 hour. When cooled, the original weight is adjusted with absolute alcohol, the liquid is filtered, and 50.5 Gm. (= 5 Gm. seeds) freed from alcohol by evaporation in a capsule; the residue is washed twice with a little petroleum-benzin, to remove all but traces of fixed oil, the benzin solution being passed through a filter in the successive portions obtained, the filter washed with 5 to 8 Gm. of boiling water, this added to the residue in the capsule and heated to boiling. Now 5 drops of solution of lead subacetate are added to the contents of the capsule, well mixed, filtered, and the capsule and filter washed with small successive portions of boiling water until the washings pass bitterless. From the filtrate and washings the lead is removed by heating to boiling, adding sulphuretted-hydrogen water as long as browning results (5–10 Gm. being sufficient), and after boiling to remove H_2S, the solution is again filtered and the filter washed with boiling water until this passes bitterless. The filtrate and washings, evaporated to dryness on a steam-bath and finally to constant weight in the exsiccator gives the amount of *impure* (*crude*) *strophanthin* in 5 Gm. of the sample. The

Determination of Pure Strophanthin is effected by adding to the last-mentioned filtrate 5 Gm. of hydrochloric acid, boiling it gently during 2 hours, and adjusting the liquid to about 20 Gm. by the addition of distilled water, if necessary. When cool it is shaken out twice with 10 and 10 Cc. of chloroform, which is filtered into a small tared Erlenmeyer flask; the residual acid aqueous portion is heated as before for half an hour, again cooled, and shaken out with three portions of 10–10–10 Cc. chloroform, the chloroform being passed through the same filter into the flask, and if the acid liquid should still be bitter, this process of heating and shaking out with chloroform must be repeated as before (the chloroform for this purpose having from time to time been recovered by distillation from the previous portions). Finally, the chloroform is distilled off from the last added portion and the residue dried to constant weight in the exsiccator. The residue so obtained is

Strophanthidin, 1 part of which corresponds to 2.182 parts of pure strophanthin, from which it is produced by hydrolysis. By multiplying the ascertained quantity of strophanthidin with this figure, and the product by 20, the percentage of pure strophanthin in the sample is ascertained.—Pharm. Ztg., l, No. 73 (1905), 772; from Caesar & Loretz's Report.

SAPOTACEÆ.

Balata and Chicle Gum—Chemical Examination.—A. Tschirch and E. Schereschewski, in continuation of investigations of vegetable secretions, publish the results obtained with balata gum and the so-called chicle gum, both the products of sapotaceous plants, and resembling gutta-percha in general properties. This is particularly true of

Balata Gum, the dried latex of *Mimusops globosa,* which is indeed one of the most important substitutes for gutta-percha at the present time. The balata examined by the author was found to have a chemical composition which confirms its close resemblance to the latter, as is shown in the following: It yielded to boiling water 1.72 per cent., to boiling alcohol 41.5 per cent., and to chloroform (after alcohol) 45.3 per cent., the remainder being impurities. The substances soluble in water proved to be albumen with a little gum. Those soluble in alcohol, the so-called resins, were separated by treatment with alcohol of varying strengths into an oily body, a small quantity of a yellow amorphous substance, *balafluavil,* and two colorless crystalline bodies, *α-balalban,* melting at 230°, and *β-balalban,* melting at 108°. These last three bodies are analogous to similar bodies isolated from gutta-percha. Treatment with hot alcoholic potash failed to saponify the resin of balata, and, particularly, no cinnamic acid could be isolated from it. The examination of a number of specimens of a true gutta-percha showed, however, that not all gutta-perchas yield cinnamic acid, and therefore this property cannot be regarded, as was first thought possible, as a means of distinguishing gutta-percha from balata. From the chloroformic solution a crystalline body resembling *gutta* was isolated, to which the name *balagutta* was given. Contrary to all expectation this body proved to be very unstable, rapidly oxidizing when exposed to the air. Analysis indicated $C_{10}H_{18}$ as the most probable formula. In addition to this body the chloroformic solution also contained a crystalline body analogous to the albanan of gutta-percha, and termed *balalbanan*.

Chicle Gum, the dried latex of *Achras Sapota*, L, produced principally in Mexico, is used almost exclusively for the preparation of chewing gums. When treated in the same manner as balata, it yielded to boiling water 16.8 per cent., boiling alcohol 59.7 per cent., boiling acetone 61.7 per cent., boiling ether 76.2 per cent., and to chloroform—in the cold—77.2 per cent. The watery solution contained mainly an optically inactive gum, but no albumen. The resin constituents separated by means of organic solvents were the following: *chiclafluavil*, yellow, amorphous, melting at 66°–67°; *γ-chiclalban*, colorless, round bodies, melting at 86°–87°: *a-chiclalban*, needle-shaped crystals, melting at 219°–221°; *β-chiclalban*, spheroid or prismatic crystals, melting at 158°–159°; *chiclalbanan*, in tufts of needles, melting at 55°–57°; and *chiclagutta*, crystallizing in slightly contorted needles. Like balata gum, chicle gum yielded no cinnamic acid when treated with alcoholic potash. The bulk of the chicle resins appears to consist of the three albans.—Arch. d. Pharm., *243*, No. 5 (1905), 358–393.

STYRACEÆ.

Storax—Determination of Cinnamic Acid.—In a paper giving the results of examination of several kinds of storax, which appeared to indicate that the supply of this drug, in so far as the Calcutta market is concerned, is not satisfactory, Mr. David Hooper describes the following method adopted for the estimation of the cinnamic acid in the sample: The storax, after it has been saponified with alcoholic potash, is evaporated to remove the spirit, and the residue is dissolved in water. Ether is added to remove the unsaponifiable resins. The liquid is then treated with sulphuric acid in excess, which causes a voluminous precipitate. This precipitate is washed, dissolved in boiling water, and the crystallized acid which separates in the cold is dried and weighed. The acid thus prepared is not converted into benzoic acid as shown by the usual tests. Tschirch and Itallie have shown that true Oriental storax contains 23 per cent. of cinnamic acid, and other estimators have concluded that the percentage of the acid should not fall below 20. If a standard of this quality were insisted upon by the British Pharmacopœia it would tend to raise the valuation of a drug, which is being at present considerably tampered with by unscrupulous dealers.—Pharm. Journ., Feb. 3, 1906, 107.

ERICACEÆ.

Uva-Ursi—Yield of Extract with Different Solvents.—According to "Helfenberger Annalen" uva-ursi leaves, examined during 1904, yielded the following percentage of extract, dried at 100° C., by extraction with different solvents: Hot water, 30.76 to 33.00 per cent.; cold water, 29.68 to 33.11 per cent.; diluted alcohol (equal parts of alcohol and water), 39.83 to 40.36 per cent.—Pharm. Ztg., l, No. 79 (1905), 835.

COMPOSITÆ.

Arnica Flowers—Characters of the Phytosterol.—T. Koolb has made some further experiment with the phytosterin of arnica flowers which show that it contains two alcohol groups, and that it is a bivalent phytosterin alcohol. It is proposed, therefore, to change the name from arnisterin to arnidiol. When acetylized, it gives the diacetyl, $C_{28}H_{44}(O.C_2H_3O)_2$, which separates in two forms: the α-diacetyl, crytallizing in fair-sized octahedra, m.p. 181° C. to 183° C., and the β-diacetyl, in long prisms, m.p., 100° C. to 101° C. The dibenzoyl, $C_{28}H_{44}(O.C_7H_5O)_2$, is a crystalline powder, m.p. 223° C. The diphenylurethane, $C_{28}H_{44}(O.CONHC_6H_5)_2$, has the m.p. about 200° C., with decomposition. This is the first bivalent phytosterol recorded.—Pharm. Journ., Sept. 9, 1905, 361; from Compt. rend., 1905, *140*, 1700.

Flores Carthami and Flores Calendulæ—Possible Utility as Reagents for Boric Acid.—In connection with his investigation of boric acid reactions with turmeric and other reagents (see boric acid), Dr. G. Fendler, in search of similar reagents tried the effect of boric acid upon tinctures of safflower and of calendula flowers, prepared in the proportion of 1:10 with 50 per cent. alcohol. He finds that if 1 or 2 Cc. of a dilute boric acid solution is evaporated to dryness in a porcelain capsule with 3 drops of a 25 per cent. solution of hydrochloric acid and 2 drops of tincture of calendula, a lemon-yellow residue remains, which when moistened with ammonia water (10 per cent.) acquires a transient yellow-red color, and forms a solution retaining their color for a short time. In the absence of boric acid the residue of evaporation is faint yellow and ammonia colors it lemon-yellow. On substituting tincture of safflower for tincture of calendula, operating otherwise in the same way, a brown-yellow residue of evaporation is obtained in either case, slightly darker with boric acid, but producing with ammonia water a transient red color, changing to yellow-red when dissolved, while with water alone the residue dissolves with a green-yellow color, without previous reddening. Both reactions are quite sensitive, and available with $\frac{1}{10}$ Mgm. of boric acid.—Apoth. Ztg., xx, No. 77 (1905), 778.

Insect Powder—Method of Examination.—H. Wippell Gadd and Sidney C. Gadd recommend the following practical tests for determining the quality of commercial insect powder. This sometimes is colored with chrome alum and turmeric. The turmeric may be detected by the method described for its detection in powdered rhubarb (see Rhubarb). To detect chrome alum and other mineral adulterants, incinerate 16 grains of powder. The ash should weigh not more than 1 grain, and should be of a light-gray color. If the ash be excessive, dissolve it in strong hydrochloric acid, add a little water, boil and filter. If chrome yellow be present the solution will have a green tint and yield a black precipitate on the addition of an equal volume of solution of hydrogen sulphide. The following test for the quality of insect powder was devised by G. R. Durrant (see Proceedings 1897, 509). It is based on the fact that the value of insect powder is in direct proportion to the combined amount of essential oil and soft acid resin, and in inverse proportion to the amount of chlorophyll: Place 100 grains of the powder to be tested in the cylinder of a 1-oz. glass syringe. The powder should be pressed down compactly on a piece of absorbent cotton to act as a filter. Moisten with ether (0.735). Close the top of the syringe, and macerate for thirty minutes. The percolation may then proceed, the powder being repercoated with the same fluid four times, and finally washed through with sufficient ether to make up 1 fl. oz. The resulting percolate should be of a rich yellow color. If a pronounced green color be the result, the sample may be discarded at once. In the absence of much green coloring-matter the fluid may be carefully evaporated at a temperature not exceeding 200° F., and the residue weighed on a tared watch-glass. The resulting soft mass should weigh not less than 3½ grains, and should have the pleasant characteristic odor of the flowers.—Pharm. Journ., Dec. 30, 1905, 902.

Insect Powder—Determination of the Ether Extract.—G. Fromme gives the following practical directions for determining the ether-soluble constituents of insect powder (*Chrysanthemum cinearifolium*): 7 Gm. of the air-dry powder and 70 Gm. of ether are vigorously shaken occasionally during two hours in a capacious vial, the ether solution is rapidly filtered through a plain-covered filter (about 9 Cm. in diameter), and 50.5 Gm. (=5 Gm. of the air-dry powder) of the filtrate transferred to a tared capsule. The ether is evaporated by placing the capsule in boiling-hot water—not in the ring of a steam-bath, which would result in the creeping of the ether-extract over the edge of the capsule—and the residue dried to constant weight in the exsiccator. The ascertained weight, multiplied by 20, gives the percentage. The extract so obtained should have a golden-yellow color, and peculiar, strong, wax-like odor, free from the odor of chamomile.—Pharm. Ztg., l, No. 73 (1905), 871; from Cæsar & Loretz's Report.

RUBIACEÆ.

Cinchona—Culture Experiments in California.—Prof. Albert Schneider, in an address read before the Lewis and Clark Pharmaceutical Congress, reviewed the subject of cinchona cultivation in various countries, and pointed out the possibilities for such a cultivation in the United States, especially on the Pacific Coast. The question of cultivating cinchona in this country came up soon after it was evident that the Dutch and the English had so well succeeded in growing this valuable drug in their respective colonies. In 1879, at the suggestion of W. Weaver, at that time in Bogota, attempts were made to cultivate cinchonas in California. These experiments were conducted under the direction of the University of California, and the plants were obtained from the English plantations in India. These experiments showed that it was very difficult to cultivate cinchonas under ordinary conditions. Proper hothouses and proper conditions of drainage were lacking at the time, and most of the test plants perished, *C. succirubra* being apparently the most hardy species. The great enemy of the cinchonas seemed to be frost, which killed them rapidly even when it occurred in the slightest degree. There are regions in California, however, the climate of which is very similar to that of the Andes, and theoretically cinchona should grow in these regions. But it seems that very slight variations in temperature are sufficient to interfere with the growth of these plants, and it is possible, as Dr. Rusby unhesitatingly states, that cinchona cannot be cultivated anywhere within the limits of this country. Success, however, is not out of the question, in view of the encouragement already received in previous tests. Prof. Schneider suggests that large quantities of the more hardy species be planted in seeds obtained from Java, India, or Jamaica. These should be sown in mat-covered or glass-covered coldframes, filled with a compost of a turfy mixture of loam and peat, to which has been added a little sand and charcoal. The bottom temperature should be kept at about 60 degrees F. The plants will not germinate so readily in hotbeds. The soil should be kept well moistened, but not wet. The seedlings should be kept under glass in beds of suitable size for two or three years, at a temperature of 50 to 60 degrees with moist air. Santa Barbara County is probably the most suitable locality for these experiments.—Amer. Drugg., April 9, 1906, 198.

Cinchona—Cultivation in Java.—W. Busse has written an interesting account of the method now employed in the cultivation of cinchona, and the management of the plantation, at Tirtasari, Java, with special consideration of the cultivation of cinchona in the Cameroon and German East Africa. This paper, which is illustrated with half-tone engravings showing the trees, etc., in various stages of development, may be consulted in Pharm. Ztg., li, No. 32 (1906), 362.

Cinchona—Culture Experiments in German East Africa.—Some interesting information concerning the cultivation of medicinal plants in German East Africa is given in the latest report of the Biologic-Agricultural Institute at Amani for the year 1904–1905, the most important probably being the progress made in the cultivation of cinchona. The different species of *Cinchona* that have been planted continue to develop favorably. The oldest of these, derived from Java, have already produced seeds which germinate well. Besides these there were about 12,000 plants of *C. succirubra* on the seed-beds at the end of the fiscal year, which have since been set out, partly at Bomole and partly in other localities, by interested cultivators. During the fiscal year also the Institute received from Java the seeds of *Cinchona robusta*, regarded to be a hybrid of *C. succirubra* and *C. officinalis*. These seeds have germinated well, and have produced about 5,000 plants, which are to be set out during the following fiscal year. Fairly satisfactory results have also been obtained in experiments by the method of Butin Schaap of budding *Cinchona ledgeriana* on *C. succirubra*.—Pharm. Ztg., li, No. 37 (1906), 416.

Cinchona Bark—Improvement of the B. P. Process of Assay.—Sydney C. Gadd suggests that the B. P. process for the assay of cinchona bark requires slight modification only, but great attention to details, which might be amplified by the following directions:

Take of

Bark	20 grams.
Slaked lime	6 grams.

Mix and triturate with 20 Cc. of distilled water. Allow to stand for one hour. Transfer to a 350 Cc. flask, add 130 Cc. benzolated amylic alcohol and attach to a reflux condenser. Boil over a water-bath for half an hour. Decant on a filter-paper having a diameter of 13 Cm. Repeat this with two successive 40 Cc. of benzolated amylic alcohol. Transfer the contents of the flask to the filter-paper. Wash with 40 Cc. hot benzolated amylic alcohol. Take 6 Cc. dilute hydrochloric acid and dilute to 42 Cc. with distilled water. Divide this solution into four equal portions, and shake the benzolated amylic alcohol solution with each in turn. Wash the benzolated amylic-alcohol solution with 10 Cc. distilled water, and add the washings to the mixed acid solutions. Nearly neutralize the solution with solution of ammonia and concentrate to about 20 Cc. If the solution begins to deposit resinous substances, slightly acidulate. Now make the concentrated solution exactly neutral with solution of ammonia. Dissolve 1.5 gram of sodium potassium tartrate in 3 Cc. of water, and add this solution to the above with stirring. Remove from the water-bath and set aside for one hour. Filter. Wash and dry the precipitate. Weigh. Eight-tenths of the weight will represent the amount of quinine and cinchonidine in 20 grams of the bark. To the filtrate add solution of ammonia, collect, wash, dry and weigh the precipitate. The weight will represent the amount of the other alkaloids in 20 grams of the bark.—Trans. Brit. Pharm. Conf. (Yearbook of Pharm.), 1905, 471.

Cinchona Bark—Practical Modification of the B. P. Assay Method.—H. Wippell Gadd and Sidney C. Gadd find that the official (B. P.) for the assay of cinchona bark requires slight modification and great attention to details to ensure satisfactory results. The following process, based on that of the Pharmacopœia, gives satisfactory results, but requires great care because of the imflammable nature of the solvent used: Take half an ounce of the bark in No. 60 powder, and mix with seventy grains of slaked lime. Slightly moisten the powder by trituration with half a fluidounce of distilled water. Allow the mixture to stand for one hour. Transfer the powder to a ten-ounce flask. Take a good cork, bore a hole in it, fix a funnel in the hole, fit the cork in the flask, and place a smaller flask containing cold water in the funnel. (It is convenient to keep another small flask at hand to replace the one in the funnel as soon as the water becomes warm.) Add three fluidounces of benzolated amylic alcohol to the contents of the ten-ounce flask, and carefully fix the whole apparatus by means of a retort stand and clamps over a water-bath. Boil the contents of the flask for half an hour. Decant the liquid on a filter-paper having a diameter of five inches. Repeat the process with two successive fluidounces of benzolated amylic alcohol. Transfer the contents of the flask to the filter-paper, and wash with an ounce of hot benzolated amylic alcohol. Take seventy-five minims of diluted hydrochloric acid, and make up to one fluidounce with water. Divide this solution into four equal portions, and shake the benzolated amylic alcohol solution with each in turn. Wash the benzolated amylic alcohol solution with two fluidrachms of distilled water, and add the washings to the mixed acid solutions. Nearly neutralize the solution with solution of ammonia, and concentrate to about half a fluidounce. If the solution begins to deposit resinous substances, slightly acidulate. Now make the concentrated solution exactly neutral with solution of ammonia. Dissolve twenty grains of sodium potassium tartrate in forty minims of water, and add this solution to the above with stirring. Remove from the water-bath and set aside for one hour. Counterbalance two five-inch filter-papers; place one within the other in a funnel in such a way that the triple fold of the inner filter shall be superposed upon the single fold of the outer filter. Wet them with water, and filter the solution. If the apex of the outer filter be cut-off, the filtration will be facilitated. Wash the precipitate; dry; weigh the residue in the inner filter, counterbalancing by the outer filter. The weight should be not less than seven grains. To the filtrate add solution of ammonia; collect the precipate which forms, wash, dry, and weigh. The weight of this precipitate added to the weight of the first precipitate should be not less than twelve and a half grains.—Pharm. Journ., Oct. 28, 1905, 579.

Cinchona—Practical Method of Assay.—G. Fromme recommends the following method for assaying cinchona bark: 2.5 Gm. of the air-dry powder (fine or coarse) are heated for ten minutes on a steam-bath with a mixture of 2 Cc. of pure 25 per cent. hydrochloric acid and 20 Cc. of distilled water. After cooling, 50 Gm. of ether and 25 Gm. of chloroform are added, the mixture is vigorously shaken, then supersaturated with 5 Cc. of 15 per cent. sodium hydroxide solution, vigorously and *continuously* shaken during ten minutes, and 1.5 Gm. of powdered tragacanth having been added, the mixture is once more well shaken. The now clear chloroform-ether solution is filtered through into a thoroughly cleansed 200 Gm. flask until 60 Gm. of filtrate (corresponding to 2 Gm. of the bark) are collected, and in this the alkaloid is determined either gravimetrically or volumetrically as follows:

a. Gravimetrically. The filtrate (60 Gm.-2 Gm. bark) is shaken out with 20, 10, 10 Cc. of 1 per cent. hydrochloric acid—if necessary with a fourth portion, consisting of 10 Cc. of $\frac{N}{10}$ hydrochloric acid of a reaction is obtained with Mayer's reagent in the last portion of acid liquid. The united acid liquids are mixed with 15 Cc. of chloroform, ammonia water is added in moderate excess and the mixture is vigorously shaken. The chloroform solution is filtered through a double filter into a small, tared Erlenmeyer flask, and the aqueous liquid shaken out twice more with 10 and 10 Cc. of chloroform, the solution being filtered through the same double filter into the flask. The chloroform is distilled off and the residue heated to 100° C. to constant weight; the ascertained weight, multiplied by 50, giving the percentage of alkaloid.

b. Volumetrically. The filtrate (60 Gm. = 2 Gm. bark) is subjected to evaporation (or distillation), the residual alkaloid is dissolved in 10 Cc. of alcohol, 10 Cc. of ether and 30 Cc. of water are added, followed by a few drops of hæmatoxylin solution, and titrated with $\frac{N}{10}$ hydrochloric acid, shaking after each addition, and adding towards the end of the titration 10 and 30 Cc. more of water. The titration is ended as soon as the liquid assumes a lemon-yellow color. Each Cc. of the $\frac{N}{10}$ acid combines with 0.0309 Gm. of cinchona alkaloids; by multiplying the number of Cc. of $\frac{N}{10}$ acid consumed by 0.0309, the amount of alkaloid in 2 Gm. of bark is ascertained, and this multiplied by 50 gives the percentage. Of the two methods the gravimetric method is regarded to be the most reliable.—Pharm. Ztg., l, No. 73 (1905), 770; from Ber. of Cæsar & Loretz.

Coffee—Its History.—Prof. John Uri Lloyd contributes a scholarly account of the history of coffee, the distribution of the plant, methods of using it, its conquest as a stimulant, the abuse of its use, etc., which does not admit of profitable condensation, and must therefore be consulted in the original, in West. Drugg., May, 1906, 235–239.

Coffee—New Caffeine-free Sorts.—Hitherto only one variety of coffee which is devoid of caffeine has been described, namely, that derived from *Coffea Humboldtiana*, of La Grande Comore, but it was not positively known whether this plant was a distinct species or simply a pathological variety of *Coffea arabica*. G. Bertrand has now had opportunity to examine three sorts of coffee from Madagascar, therefore from the neighborhood of La Grande Comore, which, although from identified and botanically-distinct species, and quite different from each other, were also devoid of caffeine-content. These species were respectively *Coffea Gallienii*, *C. Bounierii* and *C. Mogeneti*.—Pharm. Ztg., l, No. 80 (1905), 846; from Bull. des Sc. Pharm., 1905, No. 9.

Gambir—Examination and Assay.—As the result of a series of experiments carried out during the past twelve months, M. Greshoff has arrived at the following method for the qualitative and quantitative examination of gambir:

Qualitative Examination: 1 Gm. boiled with 20 Cc. of 95 per cent. alcohol should give a pale reddish-brown tincture with slight acid reaction. 10 Cc. of this tincture evaporated to dryness on a water-bath should leave at least 0.35 per cent. of residue, which, dissolved in 2 Cc. of warm water and cooled, should yield a yellowish crystalline mass. 1 Cc. of the same alcoholic tincture (= 0.05 Gm. gambir) mixed with 4 Cc. of 10 per cent. solution of sodium hydroxide and shaken with 5 Cc. of petroleum spirit imparts to the latter an intense green fluorescence (Dieterich's reaction for gambir-fluorescin). 0.1 Cc. of the tincture diluted with 10 Cc. of water gives a solution which turns grass-green with one drop of solution of ferric chloride.

Quantitative Examination:

(*a*) *Solubility.*—5 Gm. of the powdered gambir is introduced into a liter flask which is nearly filled with water that has been previously boiled and cooled; the whole is warmed on the water-bath till dissolved, the flask corked, set aside in the dark for twenty-four hours, and then made up to volume. The solution is now filtered through a filter 10 Cm. in diameter, the first 25 Cc. rejected, and the following 100 Cc. evaporated to dryness. The residue is dried in an air oven, the temperature rising during the first three hours to 105° C., at which it is maintained for a further three hours; it is then cooled and weighed. The watery extract plus the moisture in the gambir deducted from the gambir gives the matter insoluble in water.

(*b*) *Tannin.*—To 125 Cc. of the aqueous solution of the gambir 2.5 Gm. of Merck's voluminous aluminum oxide is added, well shaken and allowed to stand twenty-four hours. 100 Cc. of filtrate obtained in the manner just described is evaporated to dryness. The difference in the weight of extract before and after treatment with aluminum oxide is taken as tannin.

(*c*) *Crude Catechin.*—Powder 2 Gm. of gambir very finely with an equal quantity of pumice powder, transfer to a flask with 50 Cc. of acetic ether, and shake occasionally and vigorously during twenty-four hours; filter and wash the residue twice with 5 Cc. of acetic ether. Distil off the solvent on a water-bath with the aid of a current of air, dry at 105° C. and weigh. The residue is taken as crude catechin.

(*d*) *Crystalline Catechin.*—Dissolve the residue obtained in (*c*) in 10 Cc. of warm water, filter through a plug of wool into a crystallizing-dish, washing the residue with 5 Cc. of warm water. Let it stand twenty-four hours to crystallize, inoculating it if necessary with a crystal of catechin. Filter off through a filter 5 Cm. in diameter, wash with 5 Cc. of cold water, dry at 105°, and weigh as crystalline catechin. Good gambir should give 30 to 35 per cent.

(*e*) *Moisture.*—Powder 2 Gm. of gambir very finely with 2 Gm. of pumice powder previously dried at 105° C.; dry at 105°, and weigh. The normal amount of moisture in gambir is about 15 per cent.

(*f*) *Ash.*—Incinerate 5 Gm. of gambir and weigh. The ash varies usually from 2 to 4 per cent., and should not exceed 5 per cent.—Pharm. Journ., Nov. 11, 1905, 657; from Pharm. Weekblad., *42*, 699.

Ipecacuanha—Yield of Extract with Different Solvents.—According to "Helfenberger Annalen," ipecacuanha, examined during 1904, yielded the following percentages of extract, dried at 100° C., under the conditions mentioned: The drug was macerated with frequent agitation during 24 hours with 10 parts of the menstruum, the expressed liquid filtered, and an aliquot part evaporated to dryness. With alcohol (90 per cent.), the yield was 8.95 to 8.96 per cent. of dry extract; with 15 per cent. alcohol, 22.92 to 23.29 per cent.; with a mixture of 1 p. alcohol (90 per cent.), and 20 p. water, 22.74 to 22.86 per cent.; with diluted alcohol (G. P., 68 per cent.), 19.34 to 19.36 per cent.; with a mixture of 1 p. alcohol (90 per cent.), and 8 p. water, 22.45 to 22.88 per cent. of dry extract.—Pharm. Ztg., l, No. 79 (1905), 836.

West African Boxwood—Toxic Properties.—It has been observed that workers on West African boxwood, which is used for making shuttles, in many cases suffer from headache, sleepiness, running at the eyes and nose, faintness, shortness of breath and nausea, and often assume a yellowish or greenish color on the face and body. In some cases death has ultimately ensued from pathological conditions which appeared in the death certificates as cardiac asthma or cardiac incompetence. The wood is believed by Professor Harvey Gibson to be that of

Sarcocephalus Diderrichii, De Wild. and Dur., a rubiaceous tree described in De Wildeman's "Notices sur les Plantes Utiles ou Intéressantes de la Flore du Congo," Brussels, 1903. It is said to be characterized by the presence in it of small pockets containing a solid matter of yellow ochre color, and small, quite translucent prismatic crystals. The wood is found to contain 0.1 per cent. of an alkaloid, soluble in chloroform and in alcohol, sparingly in water, the hydrochloride being readily soluble in water and salt solution. The heated alkaloid gives off a vapor with a peculiar and penetrating odor. It does not appear to have been obtained in the crystalline form nor to have received a definite name. Physiological experiments show that it is a cumulative cardiac poison, inducing a gradual slowing of the heartbeat and diminution of vigor in the contractile tissue of the heart.—Pharm. Journ., Febr. 17, 1906, 167; from Bio.-Chem. Journ., 1906, *1*, 39.

Yohimbi Bark—Botanical Source.—Dr. Pierre describes a new plant, to the bark of which the natives of the French Congo give the name "Endun," and attributes to it aphrodisiac properties. Dr. Pierre has named this plant

Pausinystalia Trillesii. From this bark an alkaloid possessing all the characters of yohimbine has been extracted by MM. Dupouy and Beille, and the microscopical structure of the bark agrees with that of yohimbi bark in the presence of resin cavities and liber fibres arranged in radial series. Dr. Pierre consequently thinks that the yohimbi plant should be removed from the genus *Corynanthe*, in which it was placed by Schumann (see Proceedings 1902, 848), and included in a new genus, *Pausinystalia*, as *P. yohimba*, Pierre.—Pharm. Journ., Oct. 21, 1905, 553; from Schweiz. Wschr. f. Pharm., xliii, No. 38 (1905), 521.

CAPRIFOLIACEÆ.

Elder Leaves—Presence of a Cyanogenetic Glucoside.—E. Bourquelot and E. Danjou obtained from freshly cut elder leaves, by extraction with boiling 95 per cent. alcohol, neutralizing the tincture with calcium carbonate, and distilling off the alcohol under reduced pressure, a residue which, by fermentation with invertin, was found to contain saccharose in the proportion of 0.755 per cent. of the weight of leaves. After destroying the invertin by heating the fermented liquid to 100°, cooling, and then again fermenting the liquid with emulsin, the presence of a cyanhydric glucoside was proved, hydrocyanic acid being formed in notable quantity. The aqueous distillate from fresh elder leaves was found to contain benzaldehyde and prussic acid. It is evident, therefore, that the leaves contain either amygdalin or a body closely allied to it. Other parts of the plant contain a glucoside fermentable by invertin, but in some cases, as with the peduncles, no hydrocyanic acid was liberated, or only a trace, as with the fruits, although the polarimetric deviations were marked. This may indicate the presence of another glucosidal body distinct from that forming hydrocyanic acid on hydrolysis. The subject is being further investigated. —Pharm. Journ., Sept. 2, 1905, 333; from Comp. rend., 1905, *141*, 59.

UMBELLIFERÆ.

Aethusa Cynapium—Confirmation of Alkaloidal Constituent.—The contradictory views held concerning the presence of a volatile alkaloid in *Aethusa cynapium*, L., commonly known as "Fools" parsley, and also as the "lesser hemlock," and the divergent opinion regarding its reputed poisonous properties have been the incentive to a comprehensive chemical and physiological study of this plant, a well-known annual garden weed indigenous to Europe and Northern Asia. Operating on plants collected during the months of July and August, at a time when they were fully developed but still green, Frederick B. Power and Frank Tutin found them to lose about four-fifths of their original weight on drying, and to give evidence by digestion with Prollius' fluid of the presence of a very small amount of alkaloid. In the systematic course of the chemical examination of an alcoholic extract of the plant a small amount (0.015 per cent.) of a colorless volatile oil was obtained, which, however, rapidly acquired a deep brown color. The distillate also contained a little formic acid. The residue in the retort consisted of a dark-colored aqueous liquid and a quantity of resin of a tarry consistence. From the latter the author obtained a crystalline hydrocarbon, *pentatriacontane*, $C_{35}H_{72}$ (m. p. 74° C.), and a crystalline alcohol (m. p. 140°–141° C.), which is either an isomeride of *phytosterol*, or a lower homologue; while the remainder of the resin yielded, when fused with KHO, formic, butyric, and protocatechuic acids. The aqueous liquid, from which the resin had been separated, contained besides a small amount of *manitol*, a considerable amount of inactive *glucose*, and an exceedingly small amount of a *volatile alkaloid*, or possibly a mixture of alkaloids, having the peculiar odor of coniine and, like the latter, yielding butyric acid on oxidation. Although the amount of alkaloidal substance obtained (from 40 kilos of the fresh plant, 0.12 Gm. as hydrochloride) was so small that its identity could not be definitely established by analytical data, a consideration of its physical and chemical characters, such as volatility, tendency to resinify, peculiar odor, and particularly the formation of butyric acid by its oxidation, may reasonably lead to the assumption that it is either coniine or, possibly, a mixture of bases such as is obtained in a similar manner from *Conium maculatum*. Moreover, the amount of volatile alkaloid obtained from 500 grams of the air-dried plant, when administered *per os* to a dog, produced the symptoms characteristic of coniine-poisoning. The authors, having thus indisputably pointed out the presence of a toxic alkaloid in *Aethusa cynapium*, although exceedingly small in quantity, point out that it cannot be considered improbable that, under favorable conditions, the proportion of alkaloid may be increased to such an extent as to impart to the plant the poisonous properties ascribed to it.—Chem. & Drug., Aug. 5, 1905, 268.

Herba Conii—Absence of Alkaloid.—Calling attention to commercial conium herb containing large percentages of other plants in admixture—*Chærophyllum bulbosum*, L., in one instance, *Æthusa cynapium*, L., in another—Dr. Tunmann describes a sample of true conium herb, collected during the current year, apparently unexceptional in its physical qualities, which, however, failed to develop the odor characteristic of the plant on treatment with lime water. Chemical examination demonstrated that the herb was entirely devoid of alkaloid. The examination having been made within six months of its collection, it is evident that, similarly to Scottish hemlock, which generally is devoid of alkaloid, the absence of coniine in the present sample is due to natural conditions of growth and development, and that the dismissal of conium herb from the G. P. is desirable.—Pharm. Centralh., xlvi, No. 46 (1905), 46.

Herba Conii—Investigation of "Single Crystals Occurring in the Leaf Epiderm.—The assumption of Adolf Meyer (1882) that the crystals which occur in the leaf epiderm of *Conium maculatum* consist of hesperidin, has been heretofore accepted in all the authoritative text-books, pharmacopœial commentaries and by authors generally, with the single exception of Tschirch (1900), who, in his "Anatomical Atlas," mentions these crystals as occurring in form of needle-shaped crystals, soluble in potassa or in form of sphærocrystals. Dr. Tunmann now contributes an interesting paper, in which he points out that two forms of crystals do occur in the leaf epiderm of conium plants, the one in the form of tufts of sphærocrystals, the other in the form of isolated crystals, which for the purpose of the present description he designates as "single crystals." While the sphærocrystals may or may not be hesperidin, the "single crystals" certainly are not hesperidin. They occur preponderatingly in the upper epidermis of the leaf attached to the cell-walls, but occur also in the under epiderm and in the mesophyll. They occur in forms of well-shaped needles and prisms, often quite long, pointed at one end, and disposed either singly or several of them are arranged crosswise. In their physical properties, as well as chemical reactions, these crystals exhibit great similarity to the chromoplasts of *Daucus carota*. Their solubility in benzin, petroleum-ether, warm ether, benzol and chloroform, and above all, the formation of a blue color with concentrated sulphuric acid, justifies the assumption that these crystals belong to the carotin group of chromogens. The chemismus of this chromogen, as well as of the other natural plant coloring-matters, however, requires further investigation.—Pharm. Ztg., l, No. 100 (1905), 1055-1057.

Carrots—Presence of a Liquid Alkaloid in the Leaves.—A. Pictet has isolated from the leaves of the carrot, *Daucus carota*, L., a liquid alkaloid, resembling nicotine or coniine in odor, but differing in other respects from their bases. It is soluble in water, producing a strongly alkaline solution. Its chemical constitution has not yet been determined, but it is probable that it contains a reducing pyrrol nucleus.—Pharm. Ztg., l, No. 104 (1905), 1096; from Chem. Ztg., 1905, No. 97.

Eryngium Campestre—Yield and Character of Volatile Oil.—Schimmel & Co. having obtained from a business friend in the south of France some oil which was distilled from the fresh herb of *Eryngium campestre*, L., in a yield of 0.088 per cent., describe it as follows: The oil has a faint yellow color, and a pleasant undetermined odor, reminding distantly of oil of ambretta seeds. Its sp. gr. at 15° is 0.9043; a_D, $-5°42'$; $n_{D\,20°}$, 1.48518; ester number, 10.47; solubility, insoluble in 10 vol. of 80 per cent. alcohol, but soluble in 1 vol. of 90 per cent. alcohol, becoming faintly opalescent on dilution.—Schimmel's Rep., October-November, 1905, 73.

Zalon Root—An Arabian Aphrodisiac.—P. Guiges states that in the bazaars of Beyreut a root is sold under the name of "zalon root," which is collected in a limited district of the Lebanon range. When the plant yielding this drug was obtained it proved to be the root of

Ferula Hermonii, Boiss. The root is of spongy texture, of a reddish-brown color, covered with papyraceous lamellæ, having at the top the remains of numerous leaves, and is furnished with numerous long fibres, which are rolled around it (as in angelica and other unbelliferous roots). The simple roots are distinguished by the peasants as the male, and the branched as female roots. It has a thick bark, forming about one-third of the root, and the bark often becomes detached from the cortical parenchyma. The taste is acrid and aromatic, strongly recalling that of galbanum. It yields 6.68 of a soft resin from the fresh root, a small quantity of a volatile oil, and a small proportion of gum. The resin differs from that of galbanum in giving with cold hydrochloric acid a green coloration, which disappears on heat being applied, and in the fact that nitric acid does not alter the color of an alcoholic solution of the resin, and in not giving a blue fluorescence when treated with water and ammonia. This resin exudes in the root at the line of separation between the wood and the bark, and is readily seen in a transverse section of the root.—Pharm. Journ., Jan. 20, 1906, 65; from Bull. des Sci. Pharmacol, xii, 287.

ARALIACEÆ.

Ginseng—Cultivation.—R. A. Davis, a pharmacist of experience, tells how interesting and profitable the work of cultivating ginseng is, and gives detailed directions how to go about the task, under the following headings: Pointers in Growing, Conditions to Avoid, Shading the Beds, Collecting the Seed, When to Begin the Work, How to Start.—Bull. Pharm., Sept., 1905, 371–374.

Chinese Ginseng—Source and Distinctions from Other Varieties.—The Kew Bulletin for 1902, No. 1, recently issued, contains an interesting paper by Mr. I. H. Burkill, M. A., on the different varieties of the celebrated ginseng plant. He refers the species that have hitherto been known as *Panax ginseng*, *P. repens* and *P. quinquefolium*, to one species, which he names *Aralia quinquefolia*, of which he considers the American plant to be the type, and the varieties of which are now called by Mr. Burkill var. *Ginseng, repens, major, Pseudo ginseng, Noto ginseng, angustifolia* and *elegantior*. Scientific descriptions of all these are given in the Bulletin. The leaves and inflorescence in all bear a strong resemblance, the leaflets varying in shape, in translucency, and in the greater or less abundance of setæ on the veins; but the roots and rhizomes vary so much in character that any one seeing the drugs would hardly credit that they belong to the same plant. This is explained by Mr. Burkill as follows: "The stem which bears the leaves and flowers is renewed every year from an underground rhizome to which, in some forms (probably in all at one period of the life of the plant), is attached a fleshy root. In the Manchurian and American varieties the root is large and the rhizome very small, but in the others the rhizome is large and fleshy." Both rhizome and root afford commercial ginseng. The rhizome elongates year by year, though the growth may be little, and the old fleshy root may give place to a fresh one, or it may branch and give rise to two or three fleshy roots, according to the vigor of the plant. But these features vary in the different varieties, and branching is more common when the plants are well nourished, as under cultivation. One old rhizome preserved in a museum in America has sixty-five scars of annual roots. The var. *ginseng*, which has a very short rhizome and a fusiform root, is, according to Mr. Burkill, the source of Manchurian ginseng; var. *repens*, which has an elongated rhizome and a thick root, of the larger part of Japanese ginseng, and var. *Noto ginseng*, which has a rhizome like var. *repens*, but a small root, of the ginseng of southern China, known under the name of "San-chi." A description of the cultivation of the "San-chi" in the mountains of Mengtze, as observed by Dr. Henry, is given. Several other plants have the name of San-chi or Tu'sanchi applied to them, but are of no particular value as medicines in the eyes of the Chinese. The high price of some of the ginsengs, and the firm belief of the Chinese that ginseng sustains life more than any other drug, leads Mr. Burkill to suggest that an inquiry into their medicinal value might prove of some scientific interest.—Pharm. Journ., May 26, 1906, 642.

RANUNCULACEÆ.

Indian Aconites—Description of New Species.—In the conspectus by E. M. Holmes of a monograph of the aconites of India by Dr. O. Stapf, published since the issue of the last "Museum Report" of the Br. Pharm. Soc. (1904), in which further light is thrown on the source of *Nepaul aconite* of commerce, the following new species (of which only the roots were described in the last "Museum Report" are thus distinguished:

Aconitum Chasmanthum.—Leaves deeply dissected, cordate-orbicular in outline. Carpels five, connivent, seed-angles winged, seed-faces without transverse lamellæ. This species bears much resemblance to *A. Napellus* in leaves and flowers, but the smooth seeds and the five carpels readily distinguish it from that species.

Aconitum Deinorhizum.—Leaves deeply divided, almost to the base. Carpels usually three, and covered with appressed grayish hairs. This species differs from *A. Napellus* in the leaf segments being broader below, with larger sinuses between them, and in the leafy bracts being not palmatisect, but only lobed and incised, with rather obtuse teeth ; the large root with large isolated vascular strands also forms a distinguishing feature.

Aconitum Balfourii.—Leaves less deeply divided, with three broad divisions, the central one rhomboidal cuneate in outline. Carpels five, densely covered with yellow hairs. This species resembles *A. deinorhizum* in the slightly divided leafy bracts, which have more acute teeth, and in the root having isolated vascular strands, but differ in the five carpels, which have spreading hairs. The seeds are trigonous, with transverse lamellæ on the back only.

Aconitum Falconeri.—Leaves resemble those of *A. balfourii* in the broad segments and in the slightly divided leafy bracts. Carpels five, nearly glabrous, having only a slight silky pubescence. The follicles are about 14 to 18 Mm. long. The cambium forms a continuous ring, which in the dried root appears compressed and less sinuous than in *A. Napellus.*

Aconitum Spicatum.—Leaves have broad segments, the central one being rather longer and the leafy bracts are pinnatifid rather than palmatifid. As in the two previous species the carpels are five in number, covered with villous hairs, and only 10 Mm. long when mature. The root has a continuous cambium, forming a more or less sinuous ring, which appears compressed in the dried root.

Aconitum Laciniatum.—Leaves are palmatisect, and have narrower segments than *A. spicatum*, but not so narrow as *A. Napellus*, and the leafy bracts are palmatisect. Carpels three, with recurved styles, and covered with a dense grayish coat of appressed, curved hairs. The cambium is continuous, forming a stellate ring. The follicles are longer than in *A. spicatum*, being 18–25 Mm. long.

Aconitum Ferox, Wall. ex Seringe.—This plant has been selected by Dr. Stapf to represent the *A. ferox* of Wallich, who confused several species under this name. It is not the plant which yields the *Nepaul aconite* of English commerce, this being derived from *A. laciniatum* only, as is further confirmed by the researches on the alkaloids of the Indian aconites in the Chemical Laboratory of the Imperial Institute, which have demonstrated that the only species in which "pseudaconitine" has been found is *A. laciniatum.* The leaves of *A. ferox* resemble those of *A. laciniatum*, except that the segments have wider sinuses, and their apices are more divaricate. As in the latter species, the leafy bracts are palmatifid. The only other species which, from the structural character of the root might have been regarded as a source of *Nepaul aconite*, is *A. spicatum*: but this yields a different alkaloid, to which the name "bikhaconitine" has been given, and this alkaloid has never been found in the "pseudaconitine" of commerce. Another aconitine, "indaconitine," has been obtained from *A. chasmanthum*.—Pharm. Journ., Dec. 16, 1905, 831.

Aconite Root—Variability in Potency.—An interesting discussion on the variation in the toxic power of aconite root has taken place at the Société de Thérapeutique at Paris. Chevalier stated that he had come across a sample of aconite root from North America which contained 0.378 per cent. of crystalline aconitine and 0.580 per cent. of an amorphous base having the melting-point 204.5 and the optical rotation of japaconitine. This amount of bases is quite exceptional, the yield generally being from 0.2 to 0.5 of total alkaloids. The danger of using such potent root in the preparation of galenicals is obvious; an extract made therefrom by the method of the Codex contained 50 Mgm. of alkaloids in each Gm. instead of 25 Mgm. In morphological characters this root agrees with the official (Codex) description in every particular. Bardet stated he had observed an enormous difference in the potency of aconite gathered in the Zinal Valley compared with that derived from the Vosges, the former being much more toxic.—Pharm. Journ., April 21, 1906, 471; from Bull. gén. de Therap., 1905, *150*, 713.

Hydrastis—Cultivation.—Northam Warren observes that the decrease in the natural supply of goldenseal has caused the price to shoot up to a high figure, and points out in a very interesting way that the plant may be cultivated with profit and pleasure, especially by pharmacists in the smaller towns. He gives explicit directions how to go about the task, how to cultivate the plant, when to begin, the method of propagation, and gives estimates of the possible profits of the undertaking. A list of firms and persons from whom plants for starting a goldenseal bed may be secured is appended to the paper.—Bull. Pharm., Aug., 1905, 325–327.

Ranunculus Ficaria—A New Hæmorrhoidal Remedy.—Sir James Sawyer has used a salve prepared from the fresh plants of *Ranunculus ficaria* with excellent results for the treatment of hæmorrhoids. The small plants, collected in spring, are cut finely and subjected to the action of melted lard, the mixture being subjected to strong pressure, so that the juice of the plant may be incorporated with the fat. By the addition of spermaceti the consistency of the salve may be changed so that it may be formed into suppositories.—Pharm. Ztg., l, No. 74 (1905), 783: from Therap. Monatsh., 1905, No. 9.

Thalictrum Aquilegifolium—Hydrocyanic Acid-Yielding Glucose in the Leaves.—L. v. Italie has obtained from the leaves of *Thalictrum aquilegifolium* hydrocyanic acid amounting to 0.05–0.06 per cent. of the fresh leaves, a quantity equal to about one-half that is usually obtainable from cherry laurel leaves. The hydrocyanic acid, as in other plants, is not present in the free state, but is evidently produced from a glucoside by the action of emulsin. The leaves of other species of *Thalictrum—T. flavum*, *T. minus* and *T. glaucum*—however, did not yield hydrocyanic acid.—Pharm. Ztg., l, No. 89 (1905), 929; from Journ. de Pharm. et Chim., 1905, xxii, No. 8.

RUTACEÆ.

Angostura Bark—Occurrence of a New Crystallizable Base.—In the course of a comprehensive study and examination of the alkaloids of angostura bark, H. Beckurts and G. Frerichs have determined a method for the successful separation and isolation of the four known crystallizable alkaloids, cusparine, galipine, cuspiridine, and galipidine, from the accompanying amorphous alkaloids. The method depends on the property of the crystallizable bases to form crystalline salts with both inorganic and organic acids, such as acetic and tartaric acids, whilst the amorphous bases are incapable of forming salts with organic acids, although forming such with inorganic acids. The authors' investigations have also led to the discovery, in admixture with the amorphous bases, of a new crystallizable base, which they have named "cuspareine" (see under "Organic Chemistry.")—Arch. d. Pharm., *243*, Nos. 6 and 7 (1905), 470–493.

Guaiacum—Reactions.—Petit and Mayer have studied some reactions of guaiacum obtained with the tincture. In an atmosphere of hydrogen this gives an intense blue color with ferric and manganic salts in the dilution of 0.02 Mgm. in 100 Cc., also with silver nitrate and carbonate. With ferric chloride the salt is reduced to the ferrous state; with silver nitrate decolorization soon occurs, with precipitation of a mixture of silver oxide and metallic silver. Ferrous chloride gives no reaction with guaiacum tincture in an atmosphere of hydrogen, but the blue color is produced in the presence of the least trace of air. Guaiacum does not react with manganous chloride, but it does so with the lactate or acetate. Citric acid prevents the reaction with ferric chloride. Tincture of guaiacum in an atmosphere of hydrogen dissolves ferrous oxide and both manganous and manganic oxide; the first solution is gradually colored blue in the air, and immediately on addition of hydrogen peroxide. The manganous solution only becomes colored in the air on the addition of traces of lactic or acetic acids. The manganic solution turns blue in air on adding a trace of acid or of hydrogen peroxide. Ferric oxide and guaiacum tincture give no color unless the liquid contains much alcohol or a large quantity of the tincture be used. Hydrated ferric oxide gives no color, in air or hydrogen, if treated with only a few drops of the tincture, but if more alcohol be added the blue tint appears. The blue-colored substance formed in all the above cases is soluble in chloroform and in alcohol, but the solutions rapidly become decolorized. The presence of egg albumin notably diminishes the delicacy of the reaction, especially in neutral solutions.—Pharm. Journ., Aug. 19, 1905, 251; from Compt. rend., 1905, *141*, 193.

Jaborandi Leaves—Examination of Commercial Samples.—E. W. Mann has examined five samples of jaborandi leaves procured in response to an inquiry for *good* jaborandi, if possible for the leaves of *Pilocarpus Jaborandi.* This variety, however is practical unobtainable. Of the five samples, No. 1 consisted of *Pilocarpus racemosus* (Guadeloupe jaborandi); Nos. 2, 3, and 4 of *P. pennatifolius;* while No. 5 was a mixture apparently of *P. pennatifolius*, *P. Jaborandi*, and of a hairly leaf either belonging to *P. trachylophus*, or being a hairy variety of *P. Jaborandi.*

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
Total alkaloid by titration	0.26	0.13	0.21	0.16	0.43

The leaves were powdered and assayed for total alkaloid by the method of the United States Pharmacopæia, total alkaloid being determined by titration and calculated as pilocarpine. The practical worthlessness of the greater part is at once apparent, all the samples identified as *P. pennatifolius* giving extremely low percentages of total alkaloid, and only with No. 5 was the amount of alkaloid usually expected attained.

This sample (No. 5) contained a very considerable amount of woody stem, and, as a matter of interest, this stem was picked out and assayed separately:

Leaves (70 per cent. of whole) contained 0.44 per cent.

Stem (30 per cent. of whole) contained 0.41 per cent., giving 0.43 per cent. on the whole sample.—Pharm. Journ., Dec. 9, 1905, 788.

STERCULIACEÆ.

Cacao—Commercial Sorts and Anatomical Distinctions.—Hugo Kühl describes the characteristic features of the cacao seeds found in German commerce, and records the results of the microscopic examination of the more important sorts with the object of establishing, if possible, characters of distinction available for the identification of their source and quality. The physical characters of thirteen varieties examined are briefly as follows:

Caracas Cacao, from Venezuela: ferrated; large, roundish seeds of a red-brown color, with brittle shell.

Maracaibo Cacao, also from Venezuela: natural, not ferrated; red-brown, with dirty violet blotches, due to adherent pulp.

Cauca Cacao, from Columbia: very similar to Maracaibo cacao. These three are designated as "high quality."

Guayaquil Cacao, from Ecuador: flat, egg-shaped seeds, red-brown in color, here and there of a dirty violet, due to adherent pulp. Designated as "good quality." This sort mostly used by German chocolate manufacturers.

Ceylon Cacao has the shape and size of almonds, a light red-brown color, and is designated as "medium good."

Thomé-Cacao, from the island of St. Thomas: of medium size, with depressed shell, of a red-brown color, in places dirty violet from adhering pulp.

Trinidad-Cacao, from the island of Trinidad; the seeds larger than those from St. Thomas, and the shells not depressed.

Grenada-Cacao, from the Lesser Antilles, occurs as small, almond-shaped seeds of a yellowish-brown color.

Bahia-Cacao, from Brazil; dirty-violet seeds, with loose, easily-detachable shells. The preceding five sorts are designated as "medium quality"; the following three as of "inferior quality":

Samana-Cacao, from the island of Samana (St. Domingo): light-yellow seeds, with dirty-violet spots of adhering pulp.

Accra-Cacao, from the African Gold Coast; pale-red seeds, having the shape and size of almonds.

Cameroon, Cacao A, from German West Africa; fairly large seeds, of a dirty-violet, frequently almost black color, and having a rough, brittle shell.

A microscopic study of these different sorts proved absolute identity of their anatomical structure, the author being unable to discover even the faintest element of distinction. Bastin (1894) had noted some distinctions based on the grouping of the starch granules, some sorts having a preponderance of compound granules, in groups of two and three; at the same time the individual starch grains exhibited remarkable similarity in all the sorts of cacao seeds that had been examined. An examination of the starch of six representative sorts, selected from the above-described list, showed them all to contain compound granules, with the single granules preponderating. The starch of Trinidad-cacao exhibited markedly few compound granules, and, by comparison, Bahia-cacao a large number; in Guayaquill-cacao, twin-granules preponderated over triplets; but the immense number of starch granula in these seeds, the identity of their structure, and their small size ($3–9\mu$), preclude the practicability of definite comparison. While however it is practically impossible to distinguish between the different commercial sorts of cacao seeds by other than their external characters and appearance, it appears to be quite possible to distinguish between good and inferior (or less desirable) qualities of the same seed. It is well known that the bitter and astringent taste of the seeds is destroyed by subjecting them to a process of sweating (fermentation); this process results in the formation of numerous spores of *Saccharomyces cerevisiæ* and of *S. ellipsoides*, which, adhering to the remains of pulp on the seeds, are revealed by the microscope, while in the unfermented seed they are invariably absent.—Pharm. Ztg., l, No. 60 (1905), 631–632.

Cola Nuts—Structure.—It is well known that genuine cola seeds when fresh are sometimes white, sometimes red in color. This difference has been ascribed to a difference in the age of the seed, the old ones being riper and having developed the characteristic coloration. C. Hartwick, however, finds that this is not the case, as is proved by a seed in which two embryos had grown together, one of which was red and the other white. Noticeable on commercial dry seeds is a narrow, slightly raised line which encircles the seed close to the line of division of the two cotyledons. This line is not visible in the seeds as taken from the fruit, but after keeping in the moist condition it gradually appears. At first the walls of some of the underlying cells turn brown, and then a thin layer of cork forms; it is apparently a precaution taken by the embryo to protect itself from further changes by long keeping. The seeds of *C. acuminata* have, as is well known, four cotyledons; these are distinguished from those of *C. vera* by containing mucilage cells, sometimes in very small number but sometimes in abundance.—Pharm. Journ., April 21, 1906, 471; from Ztschr. d. Allg. Oesterr. Apoth.-Ver., *44*, 119.

Cola Nuts—New Constituent.—Goris has isolated from fresh cola nuts 0.3 to 0.4 per cent. of a new constituent in the form of prismatic crystals, melting at 150° C., which he has named

Colatin (*Kolatin*). It differs completely from colanine (kolanin) and above all in not yielding caffeine when hydrolyzed. By sulphuric acid it is split into glucose and a phenol-like body, which is colored green by ferric chloride and yellow-red by ammonia. Colatin is readily soluble in water, and more readily in alcohol, acetone and acetic ether, but difficultly in ether, and nearly insoluble in chloroform.—Pharm. Ztg., li, No. 11 (1906), 118; from Rép. de Pharm., 1906, No, 1.

Kalamet Wood—An Odorous Burmese Wood.—E. M. Holmes contributes some interesting information concerning kalamet wood, a highly fragrant wood exported from Burmah. It is derived from a sterculiaceæ, first identified by Capt. Gage, and when assigned by Dr. Prain to the genns MAUSONIA, was named in his honor

Mausonia Gagei. The large trees vary from 5–7 feet in girth, but none are ever cut down by the collectors, as the wood in the green state has a pungent and disagreeable odor, and only smells fragrant after it has been lying in the forest for years; yet notwithstanding the annual collection the supply of dead wood from windfalls is inexhaustible in these forests. This seems fortunate, since the natives are afraid to cut the trees down on account of "gnats" or demons." The wood is described by Mr. J. S. Gamble as follows: Bark, ⅛ inch thick, dark grayish-brown, with shallow vertical fissures, the outer part peeling off in thin, irregular flakes. Wood very hard, heart-wood dark olive-brown, sap-wood light-brown, texture close and homogeneous. Annual rings doubtful, but rings are clearly seen though difficult to trace. If true rings, however, there are about 14 to the inch of radius, a very slow growth. Pores small, very numerous, arranged in more or less conspicuous but often oblique concentric lines; evenly distributed, the pores touching the adjoining medullary rays on either side. Medullary rays fine, very numerous, regular, long, about 300 to the inch, a radial section showing a finely-marked silver grain. Weight about 70 pounds per cubic foot.—Pharm. Journ., Dec. 16, 1905, 832.

AURANTIACEÆ.

Fructus Aurantii Immaturi—Variability of Oil-Content in the Spanish and Italian Drug.—H. Hænsel mentions in his "Frühjahrsbericht" that while there is no distinction made in the commercial value of immature oranges from Sicily and from Spain, there is a considerable difference in the content of volatile oil in the two commercial sorts. The Sicilian drug yielded 0.712 per cent. while the Spanish fruits yielded only 0.372 per cent. The optical rotation of the oil, determined in alcoholic solution on account of its dark-brown color, showed also slight variations—that from Spanish fruits being + 58.13°, the Sicilian + 49.10°.—Pharm. Ztg., li, No. 31 (1906), 352.

VITACEÆ.

Marsala Wine—Preparation.—Calling attention to the practice of producing imitations of Marsala wine, G. Possetto gives the following interesting information concerning the preparation of wine from the Marsala grape grown in the neighborhood of Marsala, Italy. These grapes are extremely rich in sugar, so that the wine resulting from the ordinary method of expression and fermentation will naturally contain as high as 13 to 15 per cent. of alcohol. It is the practice, however, to fortify this wine, so that it may contain from 16 to 19 per cent. of alcohol, this being done by adding from 3 to 5 per cent. of boiled must, and from 6 to 7 per cent. of so-called "sifone," the latter being a mixture of the natural must (or grape juice) with 20 to 25 per cent. of alcohol, while the boiled must is the natural must reduced by boiling on the open fire to about one-fourth its original volume. The mixture is allowed to ripen for several years, during which it is occasionally drawn off for the purpose of clarification and results in the development of the peculiar ether which gives to genuine Marsala wine its characteristic odor and taste. This method is pursued, with slight modification, by all producers of genuine Marsala wine, whilst the imitated products are usually mixtures of genuine Marsala wine with a large quantity of inferior Italian wines (Sardinian, etc.). containing high percentage of alcohol; filtering the the mixture after standing some time, and coloring the more or less decolorized filtrate with so-called "caramellin," a mixture of two tar colors known as "acid-yellow," and "Bordeaux S." Such fabricated wines are sold under the pompous titles, "Marsala padronale" or. "Marsala difatoria special."—Schweiz. Wschr. f. Chem. u. Pharm., xliii, No. 43 (1905), 593; from Giornale di Farm., Turin.

ERYTHROXYLACEÆ.

Coca—Alkaloidal Assay.—K. de Jong recommends the following modification of Keller's method for the assay of coca leaves: 25 Gm. of the dried and powdered leaves are moistened with 10 Cc. of ammonia (10 per cent. ?; Rep.), and shaken during half an hour with 200 Cc. of ice-cold ether in a well-closed flask. The mixture is then shaken with 60 Cc. of ice water, and filtered through cotton, and 100 Cc. of the filtrate are shaken out in a separatory funnel successively with 50 and 25 Cc. of 0.5 per cent. hydrochloric acid, filtering the acid solutions through a well wetted filter. After shaking the filtrate once with ether, it is neutralized with ammonia, and shaken out successively with 50 and 25 Cc., and a third and fourth portion of a few Cc. of ether is distilled off from the united solutions, and the last traces of adhering water are removed from the residue by alternately heating and passing air through the weighing flask. The residual alkaloid represents all the bases contained in the coca leaves except the benzoyl ecgonine.—Pharm. Ztg., l, No. 87 (1905), 919; from Chem. C.-Bl., 1905, ii, No. 16.

SAPINDACEÆ.

Sapindus Rarak, D. C.—*Constituents of the Fruit.*—After a comprehensive description of the fruits of *Sapindus rarak*, D. C., obtained from the Botanical Institute of Buitenzorg, O. May gives the results of a chemical examination of the rind and embryo of the fruit. The rind yielded about 13.5 per cent. of a saponin, which is amorphous, and resembles in its characters most of the saponins heretofore described. It is present chiefly in the mesocarp, and particularly in the inner cellular layer. The cell-sap contains besides saponin also acid potassium phosphate, but some cells are completely filled with single crystals of calcium oxalate or aggregations of the same. The endocarp also contains much calcium oxalate, but no phosphate. The embryo gives only a faint reaction of saponin, but yields about 26.17 per cent. of a non-drying fixed oil, water-insoluble fatty acids from this oil being composed of 80.5 per cent. of oleic, 15.6 per cent. of palmitic, and 3.9 per cent. of stearic acids.—Arch. d. Pharm., *244*, No. 1 (1906), 25.

"*Paka*" *Seeds.—The Source of Macassar Oil.*—D. Hooper gives some interesting information concerning "paka" seeds, the source of macassar oil "Paka" is the name given in Calcutta to the seeds of

Schleichera trijuga the lac tree or kosumba, also known as the Ceylon oak. The tree is found over the greater part of India, excluding Bengal, Assam, and other localities. A preparation for the hair has been known since the early Victorian era as macassar oil, against which the common and old-fashioned antimacassar was originally intended to protect couches and chairs, but its origin has for many years been carefully guarded as a secret. The name macassar was probably derived from the fact that the seeds yielding the oil came originally from the Malay Archipelago. *Mangkasar* is a Malay term properly applied to the name of a people inhabiting the Celebes, although it is now the name of a Dutch seaport in the island. In the sixteenth and seventeenth centuries Celebes was called by European writers the Isle of Macaçar or Mangasar. A recent visitor reports that after considerable inquiry he finds that as far as he can discover in Macassar at the present time there is no special kind of oil either produced or prepared. Macassar hair oil is made up now according to many fancy receipts. In America an oil of the name is merely a solution of Ylang Ylang oil (*Cananga odorata*) in coconut oil. The inhabitants of the villages and aborigines of the forests use macassar oil for ordinary domestic purposes. As an illuminant and for cooking it is employed in Bengal, Bombay, Burma, Madras, Travancore, United Provinces, and Central Provinces, as a hair oil in the United Provinces and Dangs of Bombay. In the Nilgiris the oil is used for anointing the body. The medicinal effects are variously reported as purgative (in the United Provinces) and as prophylatic against cholera (in Thana division, Bombay). It is more usual to apply it externally in massage for rheumatism (Bombay), for the cure of headache (Sambalpur, Central Provinces). Its application in Bombay, Malabar, and Coorg is said to be effective in removing itch and other forms of skin diseases, and this remedy is known to the wild forest tribes. The powdered seeds are applied to ulcers of animals and for removing maggots. No oil is sold or exported in any of the districts. Notwithstanding the peculiar taste of the ripe fruits and seeds they are eaten by local tribes of the United Provinces, Central Provinces, Bombay (Bhils and Panch Mehals), Burma (Tenasserim), Madras (Coimbatore). In Berar the seeds are regularly eaten, and largely consumed in times of scarcity or famine. The kernels contain about 60 per cent. of oil, and the entire seed about 40 per cent.—Pharm. Journ., Sept. 9, 1905, 361; from Agricult. Ledger, 1905, 1.

POLYGALACEÆ.

Securidaca Longipedunculata, Fresen.—An African Fibre Plant.—E. M. Holmes states that the root and branchlets of *Securidaca longipedunculata*, Fresen, have on several occasions been sent to the Museum of the Brit.

Pharm. Society for identification. The plant is a shrub attaining in Abyssinia, Senegal, Nigeria, and southward to Mozambique and Angola, Amboland and the Transvaal, a height of eight to ten and occasionally 14 feet. Its exceedingly tough bark contains a strong fibre, which is used in Zambesiland under the name of "Buaze fibre," while the fibre obtained from the young branches in Nyassaland is said to be equal to hemp. The leaves are coriaceous, varying much in shape from linear-lanceolate to ovate oblong, from ¾ to 2 inches long and from ¼ to ¾ in. broad. The flowers, which appear in March, are more or less rose or violet colored, variegated with white and have an odor of violets. The fruit is a samara, 1½ to 2½ inches long. The seeds contain a drying oil. The root has a pale faun color, a thick starchy bark, and is remarkable from a botanical point of view for enclosing the fibre every few years. It appears to contain a saponin, since the bark, when shaken with water, gives a frothy solution. At different times the leaves of the plant have been recommended as a remedy for snake-bite and hydrophobia; the root as a remedy for stomach complaints, and more recently as a remedy against the Issa arrow poison prepared from the seeds of *Strophanthus gratus*.—Pharm. Journ. Dec. 16, 1905, 832.

PAPAVERACEÆ.

Bocconia Cordata—Chemistry.—In continuation of the study of Murrill and Schlotterbeck on the alkaloidal constituents of Bocconia cordata (see Proceedings, 1900, 128), J. O. Schlotterbeck and Walter H. Blome contribute an exhaustive paper on the alkaloids of this drug, with particular reference to the most suitable method of preparing the principle alkaloidal constituents, protopine and β-homochelidonine, which are present in about equal percentages, and the study of the chemistry of the latter. This study has not been completed owing to the exhaustion of the material at hand, but points out that the β-homochelidonine is not a chemical individual but a mixture of substances. Two other forms of this alkaloid, having the same empirical formula ($C_{21}H_{21}NO_5$) have been described, designated respectively as a- and γ-homochelidonine. and differing only in their melting-points from the β-alkaloid. As pointed out by other experimenters (Wintgen, and Fischer), however, these differences are due to the method of crystallization, the one body being convertible into the other and back again into the original according to the method employed. —Pharm. Rev., Oct., 1905, 310–321.

Flores Rhœados — Yield of Extract. — According to "Helfenberger Annalen," red poppy petals, which are used principally for preparing Sirupus Rhœados (G. P.), yielded the following percentages of extract, dried at 100° C.: 10 Gm. extracted with 200 Gm. of boiling water, 39.79 to 45.00 per cent.; when extracted with the same quantity of water to which 0.2 Gm. of citric acid had been added, at a temperature not exceeding 35°–40° C., the yield was 39.18 to 40.83 per cent.—Pharm. Ztg., l, No. 79 (1905), 835.

Opium—Experimental Cultivation in German East Africa.—In the course of a review of the method and results in opium cultivation in all countries where the poppy has heretofore been grown, K. Braun gives some interesting information concerning the cultivation of the poppy in German East Africa. As early as 1886 it had been pointed out by Hammerstein that these colonies are very well adapted for the cultivation of these plants, and experiments in this direction were accordingly made at Kwai with seeds derived from Smyrna. The limited yield of plants, and consequently of opium, prevented a thorough chemical examination of the product. Subsequently, however, larger quantities of material gave the opportunity for morphiometric determinations, which have proven quite favorable. The opium produced, containing only 5.37 per cent. of moisture, yielded 14.3925 per cent. of morphine, calculated on the dry substance. There seems therefore little doubt that opium culture in German East Africa will prove successful if earnestly undertaken.—Pharm. Ztg., l, No. 72 (1905), 759; from Der Pflanzer, 1905, Nos. 11 and 12.

Opium—Culture Experiments in Norway—P. Farup has examined opium obtained from a mixture of blue and white poppies cultivated in the vicinity of Christiania, Norway. It contained 13.48 per cent. of morphine, but only 1.93 per cent. of narcotine and 0.27 per cent. of papaverine. These results point out the possibility of producing opium of very satisfactory quality even in the high latitudes of northern Europe.—Pharm. Ztg., l, No. 88 (1905), 929; from Tideskr. f. Kemi u. Farm., 1905, ii, Nos. 8 and 9.

Opium Manipulé—A Product of Asia Minor.—Attention is directed in "Journ. de Pharm. et Chim." (1905, xxii, No. 3) to the so-called manipulated opium (Opium manipulé), which is found throughout Asia Minor and reaches commerce mainly via Smyrna. It is produced from assayed opium, the morphine content of which is reduced by admixture with apricot paste, or the like, to conform to the requirement of the country to which it is exported (10 per cent. for France, 6 per cent. for Italy). It is then reformed into cakes and finished in the usual way, with a coating of rumex fruits, etc.—Pharm. Ztg., l, No. 80 (1905), 845.

Opium—Modification of Stevens' Modified Process of Assay.—Referring to the results obtained by various workers with different methods of opium assay, as communicated by L. F. Kebler in the Proceedings of this Association (1904, 369–375), by which it was shown that the process of assay as modified by Professor A. B. Stevens (see Proceedings 1902, 864) yielded a smaller percentage of morphine than that obtained by other methods, Dr. Philip Asher describes a modification of Stevens' modified process, which has been found in his hands to give results within a few milligrams of the quantity of morphine originally taken. The full modified process, showing the modifications in italics, is as follows:

Place 4 grams of dried or powdered opium in a 100 Cc. tared porcelain evaporating dish, "*add 5 Cc. of KOH solution, 5 per cent. or its equivalent of a stronger solution, mix thoroughly with a rubber-tipped glass rod and evaporate on water-bath or drying closet, until of constant weight,*" then add 2 grams of dry, freshly-slaked lime and 10 Cc. of water and triturate continually for fifteen minutes until a perfectly smooth mixture results. Finally, add 19 Cc. of water, triturating frequently during half an hour and filter through a dry filter about 10 Cm. in diameter. Transfer exactly 15 Cc. to a 100 Cc. Erlenmeyer flask and add to this 4 Cc. of alcohol and 10 Cc. of concentrated ether and shake the mixture. Then add 0.5 gram ammonium chloride. Shake well and frequently during half an hour. Set aside in a cool place for twelve hours.

Remove the stopper carefully and preserve with any adhering crystals for future use. Pour the ethereal layer into a small funnel, the neck of which has been previously closed with a piece of absorbent cotton. Rinse the flask with 10 Cc. of ether, shake continually for five minutes and pour as before into the funnel, and when this has passed through, pour the contents of the flask into the funnel. "*Add 5 Cc. of ether to the flask, rotate gently and pour into funnel, repeating with 5 Cc. more of ether.*" Without trying to remove all the crystals from the bottle, wash the flask and contents of the funnel with saturated solution of morphine, small portions at a time, "*using 15 Cc. in all.*" When the crystals have drained, place the funnel in the bottle containing adhering crystals, and with a small rod drawn out to a curved point, lift the cotton and rinse the crystals into the bottle with 12 Cc. of decinormal sulphuric acid, using the cotton on the end of the rod to detach any adhering crystals. Place the cotton carefully into the flask, replace the stopper and agitate until the crystals are all dissolved. Rinse the cork and funnel with water. and titrate the excess of acid with fortieth normal potassium hydroxide solution, using hæmatoxylin as indicator.

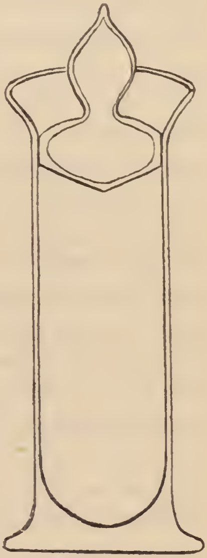
Divide the number of cubic centimeters of potassium hydroxide solution used by 4 and subtract the product from the 12 Cc. of acid used; the remainder will be the amount of acid consumed by the morphine, which number, multiplied by 1.5046, and the addition of *0.070* as the corrective factor for loss of morphine during estimation, gives the percentage of morphine in the sample under examination. The corrective factor 0.112, given by Stevens, the author considers too high; he finds 0.070 to be nearer the difference between the results obtained and the amount of substance originally taken.—Amer. Jour. Pharm., June, 1906, 262–267.

Opium Assay—Precaution Against Increasing Amount of Ammonia Water.—Charles E. Vanderkleed observes that the claim has been made that an increase of ammonia water from 3.5 Cc., directed officially, to 4

Cc. will insure a higher percentage of morphine when assaying opium. He finds that this is true, but that the morphine obtained is correspondingly less pure. In an experiment recorded, the percentage of morphine, using 3.5 Cc. ammonia water, was 12.60 per cent. and its purity 94.44 per cent., whereas when 4 Cc. of ammonia water was substituted, 12.71–12.82 per cent. was obtained, but its purity was reduced to 91.12 per cent.—Proc. Pa. Pharm. Assoc., 1905, 194.

Opium Assay—Convenient Precipitation Bottle.—Hermann Gardner observes that the removal of the precipitated morphine from an ordinary bottle, such as indicated in the B. P., is usually troublesome, owing to the interior corners and the shoulder. For this and other reasons he has designed the bottle shown in illustration by Fig. 47, which is calculated to facilitate the removal of the precipitated morphine, and at the same time to minimize any risk of its loss. Reference to the diagram, which illustrates the bottle in section, will show the absence of awkward interior corners, a shoulder being absent and the bottom concave. The base of the stopper runs to a point at an approximate angle of 140°, thereby assisting any fluid containing morphine in suspension, and remaining thereon after shaking, to drop back into the bottle. The stopper is accurately ground to fit the bottle, which is extended beyond it, upwards and outwards, to a length of 10 Mm., the rim being 13 Mm. away from the vertical. This prevents any possibility of loss of morphine should the stopper be lifted, and, moreover, tends to diminish risk of loss during decantation. The capacity of the bottle is in accordance with the B. P. requirements, and it is marked at 104 Cc., as directed.—Pharm. Journ., May 12, 1906, 548.

FIG. 47.



Precipitation Bottle.

CRUCIFERÆ.

Cruciferous Seeds—Structure—A. Tschirch has published a summary of a long and exhaustive paper by A. Oliva, recording the results of studies of the development of the seed-coats of a number of cruciferous seeds, with the object of clearing up certain discrepancies in published accounts of their structure. From this investigation it appears that during the ripening of these seeds considerable alterations in the seed-coats take place, which obscure or prevent a direct interpretation of the various layers found in them. It was found that the outer integument consists of two, three, four, or five rows of cells, of which the outermost usually becomes the mucilaginous epidermis, the innermost the palisade layer. Sometimes, however, the epidermis is entirely obliterated, while, if developed, the mucilage exhibited to a very varying degree the property of swelling in water. The cells between the epidermis and the palisade, when present, may remain distinct or become more or less obliterated. The palisade layer is, with very few exceptions, well developed, and as it is always the inner epidermis of the outer integument it serves as a reliable starting-point for the identification of the other layers. It is also the layer of most diagnostic value, as the cells vary greatly in the different seeds. The outer walls are always thin. but the radial and inner are thickened, and the extent of the thickening of the radial walls varies in different species, but is constant for the same. In some species the walls are all thickened to the same height, in others the height varies at regular intervals, and so gives rise to the pitted appearance of some of the seeds. The diameter is also important; it varies from 6^{μ} to 12^{μ} (*Brassica nigra*) to 52^{μ} to 135^{μ} (*Barbarea intermedia*). The inner integument consists of six or ten rows; these are usually obliterated, with the exception of a single row, which remains distinct and often becomes a pigment layer.—Pharm. Journ., Dec. 16, 1905, 837; from Ztschr. d. Œsterr. Apoth. Ver., *43*, 1003.

Red Cabbage—Use as Indicator.—E. Fuld recommends ordinary red cabbage (Brassica oleracea) as a serviceable indicator in alkalimetry.* The cabbage is shredded, macerated and boiled with water, allowed to stand for a day, and then strained through a sieve. The decoction is then evaporated to a small volume and mixed with a little alcohol. If preferred, an alcoholic (hydroalcoholic ? Rep.) extract may also be prepared from the cabbage. The indicator so obtained becomes red with acids and turns green with alkalies, these color changes being best viewed from above on a white surface. If moderate quantities of the indicator are added to $\frac{N}{10}$ solutions, the transition from red to green is sharp and pure, but if an excess of indicator is used the color is modified at the point of neutrality by a blue tint. This may be obviated by the addition of some yellow coloring-matter, such as tincture of saffron, for instance. The indicator is available in titration of hot as well as cold liquids, and also with artificial light.—Pharm. Ztg., l, No. 53 (1905), 562; from Münch. Med. Wschr., 1905, No. 25.

Red Cabbage—Preparation of Alkalimetric Indicator.—Referring to the observation of E. Fuld concerning the availability of the coloring-matter of red cabbage as an indicator in alkalimetry, J. Petrow communicates the results of experiments which demonstrate its usefulness (though possessing no advantages over the usual indicators) in determining the quality of aluminum salts for dyers' use, which demand complete freedom from free acid. For this purpose he recommends the preparation of the indicator by one of the two following methods:

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* The use of red cabbage as an indicator in alkalimetric operations was well known to the late Professor Procter, who, nearly 50 years ago (or more), invariably demonstrated its applicability for this purpose in the course of his lectures dealing with neutralization.—Rep.

1. 5 Gm. of shredded red cabbage are boiled for one hour with 1000 Cc. of water, and the strained decoction, adjusted to 750 Cc. is mixed 250 Cc. of 95 per cent. alcohol. So prepared, the indicator keeps unchanged for months.

2. 500 Gm. of this cabbage are extracted by percolation with alcohol of about 70 per cent., until 100 Cc. of tincture are obtained.

These preparations have a blue-violet color and require the addition of considerable alkali before they are changed to green. Alkali is therefore added in such quantity that the addition of 1 drop of normal alkali to 50 Cc. of the indicator changes its colors from bluish to distinct green. The bluish color of these solutions is scarcely perceptible on strong dilution. Concerning the sensitiveness of the indicator, the author finds that 10 Cc. of $\frac{N}{10}$ acid (sulphuric, hydrochloric, or acetic), diluted with 800 Cc. of carefully boiled water and mixed with 3 to 5 Cc. of the indicator, is probably the limit. The green color indicating the end of the reaction on titration with alkali, is just perceptible, but distinct when viewed from above, and is quite permanent.—Pharm. Ztg., l, No. 94 (1905), 990.

Red Cabbage—Use as an Indicator.—Referring to the claim of priority in the use of the coloring-matter of red cabbage as an indicator in alkalimetry, by P. Krebitz, Prof. W. Puckner mentions that twenty years ago, when he was a student at the Chicago College of Pharmacy, Professor N. Gray Bartlett proposed the use of this coloring-matter as an indicator in the volumetric estimation of acids and bases, and that in lecture demonstrations it was used effectively to distinguish between acid, neutral and alkaline solutions. When used in rather large amounts, the indicator imparts a blue color to neutral solutions, turns red with acids, and green with alkalies.*—Pharm. Rev., Dec., 1905, 375.

Horseradish Root—Cell-Contents Revealed under the Microscope.—W. A. Knight remarks as a somewhat curious fact that although horseradish root (*Cochlearia armoracia*) is still largely used in medicine, no illustrated account of its structure has yet appeared in any English textbook. This deficiency he now supplies, with excellent illustrations of the entire root and of microscopic sections exhibiting the macroscopic and microscopic features, from which the following description of the cell-contents may find place here: Throughout the parenchyma are numerous oval or rounded starch grains with central elongated hila; some of the cells, however, contain no starch, but proteid granules. Occasionally rosette crystals, soluble in hydrochloric acid, may be seen, but they are not numerous. If a section is kept in alcohol for some time, sphaerophides are deposited in the parenchyma. These do not appear to be inulin, as they are not appreciably affected by hot water. They are readily soluble in caustic potash, and are probably hesperidin. Myrosin occurs in many of the parenchymatous cells, and may be detected by the violet coloration produced by heating a section in concentrated hydrochloric acid containing 1 per cent. of orcin. Sinigrin may be detected by treating a section with alcohol (which kills the myrosin and removes any fatty oil) and then placing it in an aqueous extract of white mustard seed (which is rich in myrosin). The resulting oil of mustard (allyl isothiocyanate) is shown by the deep color produced with an alcoholic solution of alcannin.—Chem. and Drugg., Sept. 30, 1905, 546–547.

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* It is probably difficult to determine who first proposed the coloring-matter of red cabbage as an indicator. To my personal knowledge, Professor Wm. Procter, Jr., exhibited the reactions of an acetous infusion of red cabbage towards acid, alkaline and neutral media in 1859, and doubtless before, and as I now recollect, suggested its use, in place of litmus, in the form of test paper prepared from the neutralized acetone solution. In my own lectures in the Louisville College of Pharmacy, since 1871, I have invariably called attention to its uses, and, for some years exhibited red-cabbage paper and its application before my classes.—C. L. D.

Water Cresses—Chemical Examination.—K. Feist has subjected two kinds of water cresses to chemical examination, and finds that they can be differentiated by the volatile oil yielded by them. The true water cress,

Nasturtium Officinale, R. Br., yields phenylethylene mustard oil, which is optically inactive, whilst the so-called Silesian water cress,

Cardamine amara L., which is frequently confused with, or purposely substituted for, the true water cress, yields secondary butyl-mustard oil, which is optically active and possesses other characters that permit sharp differentiation of the two plants.—Pharm. Ztg., l, 72 (1905), 759.

FLACOURTIANÆ.

Hydnocarpus Wightiana and H. Anthelmintica—Constituents of the Seeds.—Power and Barrowcliff have isolated and examined the oils obtained from the seeds of *Hydnocarpus Wightiana* and *H. anthelmintica*, both of which are employed medicinally in China and the West Indies. They find the two oils to be identical in physical and chemical characters with chaulmoogra oil. They are composed of the glycerides of chaulmoogric acid, $C_{18}H_{32}O_2$, and of a homologous acid, common to the three oils, namely

Hydnocarpic Acid, $C_{16}H_{28}O_2$. Besides these the oil from *H. Wightiana* appears to contain traces of acids of the linoleic series, and the oil from *H. anthelmintica* traces of oleic and palmitic acids.—Pharm. Ztg., li, No. 31 (1906), 352; from Ztschr. f. angew. Chem., 1906, No. 12.

VIOLACEÆ.

Viola Odorata—Proximate Constituents of the Leaves.—The statement in a recent number of the "Lancet" that an apparent cure of a presumably malignant growth had been effected by the use of the leaves of a cultivated species of *Viola odorata*, known to gardeners as the "Princess of Wales," has induced H. Wippell Gadd to make an inquiry into the chemistry and pharmacy of these leaves, the more particularly since the medical man who published the case, impressed with the possible value of this ancient remedy for cancerous growths, was desirous of making clinical experiments with the drug. The chemical examination proved the absence of an alkaloid and the presence of a glucoside to the amount of 3.7 per cent., which is possibly identical or similar to *Viola quercitrin*, isolated from *Viola tricolor*, var. *arvensis*, by Mandelin in 1883. The leaves also were found to be devoid of a volatile oil, and appear to contain no volatile principle. From these and other experiments the author concludes that any activity violet leaves possess must be due either to a glucoside, the products of its decomposition, or a natural ferment associated with it, and that in the present state of our ignorance it is better to use for clinical experiments the drug, the whole drug (dried thoroughly and powdered), and nothing but the drug.—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 466–469.

Viola Odorata—Liquid Preparation of the Leaves.—In continuation of his researches on the chemistry and pharmacy of violet leaves, after recapitulating the work described in his contribution to the Br. Pharmaceutical Conference (see above), Mr. Gadd gives the following process for a liquid preparation of the leaves: Fresh leaves are taken and macerated for two days in rectified spirit. They are then percolated with rectified spirit until the percolate, after boiling with dilute mineral acid, ceases to reduce Fehling's solution. This alcoholic solution, after boiling with dilute acid, has been found to yield an amount of glucose equal approximately to five per cent. of viola-quercitrin, in the fresh leaves taken—that is to say, the alcohol thoroughly exhausts the leaves. Most of the alcohol is then removed from the solution by distillation, and the residue treated with water and made up to such a volume that one fluid part of the finished product represents one part by weight of the fresh leaves. This solution is found to contain an amount of glucose very nearly equal to five per cent. of the glucoside, and therefore it may fairly be taken that this solution represents the activity of the fresh leaves part for part. Clinical experiments are being made with this solution, the result of which will be published in due course.

It was found, however, that the liquid will not keep, and in consequence a certain amount of rectified spirit is added instead of some of the water, making the resultant product of an alcoholic strength of 30 per cent.—Chem. and Drug., Oct. 28, 1905, 695.

ILLECEBREÆ.

Chailletia Toxicaria—Chemical and Physiological Examination of the Fruit.—Frederick B. Power and Frank Tutin have made a chemical examination of the fruits of *Chailletia toxicaria*, Don., a plant growing plentifully in West Africa and South America, and, in reference to the poisonous property and uses of the fruit is known as "ratsbane." In Sierra Leone it is called "broken-back," by the Mendis of the Hinterland by the name of "Maghevi," and by the Timnes as "Manak." After the removal of the yellowish-brown fat, which is present to the amount of 1.83 per cent. in the dried fruits and is interesting because containing considerable quantities of the mixed triglyceride, oleodistearin [$C_3H_5.(C_{18}H_{35}O_2)_2.C_{18}H_{33}O_2$], which is rarely found as a constituent of vegetable and animal fats, the authors directed their attention to the resinous alcoholic extract, which was obtained in the amount of 2.5 per cent., and by action of different solvents was resolved into several products differing essentially from each other in their physiological action. Physiological experiments, conducted by Mr. H. H. Dale in the Wellcome Research Laboratories, have led to the following deductions:

I. That the fruit of *Chailletia toxicaria* contains at least two active principles, one of which causes cerebral depression or narcosis, and the other cerebral excitation, leading to epileptiform convulsions.

II. That the poison which causes convulsions is very slowly excreted, so that a cumulative effect is produced by the administration of a series of individually innocuous doses.—Merck's Rep., June, 1906, 159–160.

GROSSULARIÆ.

Currant Leaves—Glucosidal Constituent Yielding Hydrocyanic Acid.—L. Guignard has determined the presence of a glucoside in the leaves of the red and yellow currant (*Ribes rubrum*, L., and *R. aureum*), which is capable of yielding hydrocyanic acid, 100 Gm. of the leaves yielding from 0.0015 to 0.0035 Gm. of the glucoside. The stems and branches of these plants contained much less, and the roots and seeds none at all. Nor was the glucoside found in *Ribes nigrum* or any other species of *Ribes*, some of which, however, contained emulsin in variable quantities.—Pharm. Ztg., l, No. 88 (1905). 929; from Chem. Centralbl., 1905, ii, No. 17.

CUCURBITACEÆ.

Telfairia Occidentalis—A West African Oil Seed.—A recent reference to a supposed new oil-seed from West Africa leads John R. Jackson to call attention to an oil-seed that first appeared at Liverpool in 1870 which was at the time considered most likely to become an important source of a valuable commercial oil. For some few years after the above date the seeds were seen from time to time in the Liverpool market, but they do not appear to have become a regular article of import. The seed referred to is that of *Telfairia occidentalis*, a climbing cucurbitaceous plant producing very large, angular fruits, sometimes 2 feet long and 12 or 14 inches in diameter, with strong parallel ribs or wings. These fruits contain a large number of seeds, which are of a fleshy, oleaginous nature, and are covered with a fine reticulated net-work of vascular fibre. The seeds measure fully 1 inch across in the natural condition. These seeds are cooked and eaten by the natives and are described as being very palatable, and the oil expressed from them was reported at the time of their introduction as of a sweet, bland nature and quite suitable for use as a culinary oil. Both the fruit and seed are shown in illustration in the authors' note, which may serve to bring forward some information as to whether the oil has ever become an article of commerce. The new oil-seed initially referred to is designated as "water-melon seed." It is said to yield in India a clear, bland, pale-yellow, limpid oil, which is used for burning in lamps and sometimes as an edible oil. The seeds themselves are used as a cooling medicine, and are sold in the bazaars. Dymock says they are kept for use ready decorticated.—Chem. and Drug., Jan. 6, 1906, 25.

MYRTACEÆ.

Cloves—Simple Test of Quality.—The detection of the admixture of exhausted flower-buds in cloves is very simply accomplished, according to H. Wippell Gadd and Sydney C. Gadd, as follows: The clove is fixed head downward on the point of a drawing pin and a match applied to the stalk. Good specimens burn readily, emitting a pleasant, pungent odor.—Pharm. Journ., Dec. 30, 1905, 902.

Eucalyptus—Revision of the Genus.—The seventh part of J. H. Maiden's critical revision of the genus *Eucalyptus* (see Proceedings 1905, 660 and 661), contains an account of *Eucalyptus regnans*, F. v. Mull.; *E. vitellina*, Naud.; *E. vitrea*, R. T. Baker; *E. dives*, Schauer; *E. Andrewsi*, Maiden; and *E. diversifolia*, Bonpl. The *E. regnans* is the gigantic form that was formerly placed under *E. amygdalina*, and is the tallest tree on the Australian continent, sometimes attaining a height of 400 feet. The new species now includes also the var. *colossea*, F. v. M.; *E. inophloia*, F. v. M.; and *E. fastigiata*, Deane and Maiden. *E. vittelina* and *E. vitrea* are regarded as hybrids between *E. amygdalina* and *E. coricea*. *E. dives* was formerly included as a variety of *E. amygdalina* and as a species it now includes the var. *latifolia* of the last-named plant. *E. Andrewsi* was formerly included under *E. Siberiana*, F. v. M., var. *oxleyensis*, Deane and Maiden. It is allied to *E. dives* and *E. hæmastoma*, Linn. *E. diversifolia*, Bonpl., is now made to include *E. cneorifolia*, DC., in part. *E. connata*, Dum. Cours, *E. cupsidata*, Fausch, *E. dumosa*, Benth., now become *E. firma*, F. v. M., *E. pachyloma*, Benth., *E. santalifolia*, F. v. M., and *E. viminalis*, Labil., var. *diversifolia*, Benth. It must, of course, happen that different views of species must be taken when it is possible to compare the living individual, since in so variable a family of plants there must be many characters that are not observable in dried herbarium specimens, such as bark, habit of growth, etc. In so far, therefore, as Mr. Maiden's conclusions are derived from observations made on the living trees, they are more likely to approximate a correct view than those previously expressed from an examination of herbarium specimens alone.—Pharm. Journ., Jan. 6, 1905, 11.

Eucalyptus—Calcium Oxalate in the Barks of Several Species.—H. G. Smith announces the presence in large quantities, of calcium oxalate in the barks of several species of *Eucalptus*. It is similar in form and appearance in all species, being well-defined monoclinic crystals in stout microscopic prisms, averaging 0.0174 Mm. in length and 0.0077 Mm. in breadth, and containing one molecule of water. A peculiarity of these is the tendency to form twins geniculate in appearance; twinned forms being pronounced in some species. From botanical and chemical evidence it is assumed that *Eucalyptus salmonophloia* of West Australia, and *E. oleosa* of New South Wales, belong to the same species, and that the latter tree, which most often occurs as a " mallee " is only the degenerate stage of the former. The theory is advanced that some of the "mallees," or shrubby eucalypts, have been formed through the poisoning effect of the excess of oxalic acid, acting for a long time upon species which originally grew as large as trees. The tannins in those eucalyptus barks containing a large amount of calcium oxalate are of very good quality, light in color, astringent, easily soluble, and should make leather of good quality. On evaporating the extract to dryness on the water-bath but little darkening takes place, aud the product is still readily soluble. This class of eucalyptus barks should, therefore, make excellent tanning extracts. From the bark residue the calcium oxalate should be profitably extracted, and the oxalic acid obtained cheaply from this practically as a by-product. The air-dried bark of *Eucalyptus salubris*, the "gimlet" of West Australia, gives 30.5 per cent. of total extract and 18.6 per cent. of tannin absorbed by hide powder, and contains 16 per cent. of calcium oxalate. The bark of *Eucalyptus gracilis* contains 16.66 per cent. of calcium oxalate; that of *E. Behriana* 16.5 per cent.; of *E. oleosa* 10.64 per cent.; of *E. dumosa* 9.8 per cent.; and of *E. salmonophloia* 8.34 per cent. The barks of all the eucalypts tested contain calcium oxalate, although in some species in very small account.—Pharm, Journ., July 29, 1905, 116; from communication to' Royal Soc., New South Wales, through Chem. News.

Pomegranate Bark—Simple Volumetric and Gravimetric Methods of Assay.—G. Fromme (Cæsar & Loretz's Report) recommends the following methods for the assay of pomegranate bark:

a. Volumetric: 7 Gm. of the air-dry powder (moderately fine) and 70

Gm. of ether are shaken together, mixed with 5 Gm. of 15 per cent. solution of sodium hydroxide, and the mixture is vigorously shaken occasionally during half an hour; the ether is then rapidly decanted through a tuft of absorbent cotton, 5 to 10 Gm. of water are added to the turbid decantate, and after vigorous shaking this is allowed to stand. When perfectly clear, 50 Gm. (= 5 Gm. of bark) are weighed into a perfectly clean vial, 30 Gm. of distilled water and a few drops of iodeosin solution are added, and the mixture is titrated with $\frac{N}{10}$ hydrochloric acid until it just begins to become colorless, the addition of the acid being in small quantities at a time and followed by vigorous shaking after each addition. Each Cc. of $\frac{N}{10}$ acid consumed corresponds to 0.01475 Gm. of pomegranate alkaloids (pelletierine, isopelletierine, pseudopelletierine and methylpelletierine); then multiplication of this figure with the number of Cc. consumed, and the sum of this by 20, gives the percentage of total alkaloids in the bark.

b. Gravimetric: The 50 Gm. (= 5 Gm. of bark) of clarified ether solution obtained as described in the preceding are shaken out with 20–10–10 Cc. of 1 per cent. hydrochloric acid, the filtered and united acid extracts are rendered just alkaline with solution of sodium hydroxide and shaken out with three portions of 20–10–10 Cc. of chloroform, these portions being successively filtered into a small tared Erlenmeyer flask. After adding 5 drops of hydrochloric acid to the filtrate and shaking, the chloroform is distilled off, the residue is dried, at first in the dry oven at 70° to 80° C. and finally to constant weight in an exsiccator. The weight found is that of the alkaloid hydrochlorides from 5 Gm. of the air-dry bark, 184 parts of hydrochloride corresponding to 147.5 parts of pure alkaloids.—Pharm. Ztg., l, No. 73 (1905), 771.

ROSACEÆ.

Flores Rosæ—Yield of Extract.—According to "Helfenberger Annalen," rose petals (*Rosa centifolia*), examined during 1904, yielded the following percentages of extract, dried at 100° C., when extracted with 20 parts of menstrua indicated: With diluted alcohol (G. P. 68 per cent.), 25.74 to 25.92 per cent.; with hot water, 29.02 to 29.20 per cent.—Pharm. Ztg., l, No. 79 (1905), 836.

Flores Kouso—Adulteration with Male Flowers.—A Hellström has examined a commercial sample of kouso which was largely contaminated with leaves and flower-stalks (20 per cent.) and male flowers (17 per cent.) The author gives a detailed description of the drug. The occurrence of large quantities of pollen-grains in the powdered drug is also pointed out as evidence of sophistication.—Pharm. Ztg., li, No. 41 (1906), 461; from Farmaceutiskt Notisblad, 1906, No. 4.

Prunus Serotina—A False Bark.—E. M. Holmes calls attention to a specimen of a supposed bark of *Prunus serotina*, which, yielding a much darker and more astringent tincture than usual was examined, and proved to possess characters quite different in some features from the official wild cherry bark. The inner surface is much smoother, less distinctly porous, cavities representing the medullary rays being shorter and smaller, and the fracture harder and not so short. The surface has numerous very distinct depressions, and the taste is more astringent and less aromatic. —Pharm. Journ., March. 17, 1906, 315.

Cherrylaurel Leaves—New Glucosidal Constituent Yielding Hydrocyanic Acid.—See *Prulaurasin* under "Organic Chemistry."

Bitter Almond Press-cake.—Determination of *Hydrocyanic Acid*, which see under "Cyanogen Compounds, Inorganic Chemistry."

Quillaia Bark—Spurious Variety.—E. M. Holmes having his attention directed by Mr. Ernest Umney to a quillaia bark now coming into England, which differs in character from that previously imported, finds on examination that the bark presents a different appearance externally, not having regular brownish patches here and there on the outer surface as in ordinary quillaia bark, but being covered with a thin, brownish layer marked with a coarse network of whitish lines. The inner surface is smooth and white, and the small prismatic crystals of calcium sulphate are also invisible in it. He is informed also that it yields less saponin than the ordinary bark. It appears possible, therefore, that the quillaia bark at present imported may be derived from a different species of *quillaia*, as there are two other species indigenous to Chili, whence the *Quillaia saponaria* bark is derived. These are *Quillaia Poeppigii*, Walp., and *Q. smegmadermos*, DC., the name of the latter suggesting that it is most likely used, as well as the former species, as a kind of vegetable soap.—Pharm. Journ., Mar. 17, 1906, 315.

Sorbus Ancuparia—Examination of the Seeds.—The seeds of mountain ash fruits were examined by van Itallie and Nieuwland, who obtained by extraction with petroleum ether, 21.9 per cent. of a fixed oil. It is a thin fluid, yellow-brownish, has a sweetish taste, and dries rapidly when exposed to the air. The acid number was found to be 2.35 ; saponification number 208.0. The seeds also contained 34 per cent. of albuminoids and 24.2 per cent. of carbohydrates. 10 Gm. of the powder remaining after the extraction of the oil, yielded after digestion with water and distillation 7.29 Mgm. of hydrocyanic acid.—Arch. d. Pharm., *244*, No. 3 (1906), 164.

LEGUMINOSÆ.

Anagyris Fœtidus—Alkaloidal Constituents.—In confirmation of the results of the previous statements of Parthiel and Spasski, G. Groesmann's chemical investigation of the seeds of *Anagyris fœtidus*, proves that the crude alkaloid obtained is separable into cytisine, $C_{11}H_{14}N_2O$, and into anagyrine, $C_{15}H_{22}N_2O$. The last named is not obtainable in crystalline condition. It forms a brittle, colophonium-like mass, easily reducible to a yellowish powder, but rapidly absorbing moisture and becoming tenacious. It is volatilized at 245° C., apparently retaining uniformity of composition. It is present in the crude alkaloid to the amount of about 64 per cent.—the crude alkaloid being the basic constituent of the so-called *anagyrinum hydrobromicum*, formerly marketed by E. Merck.—Arch. d. Pharm., *244*, No. 1 (1906), 20.

Balsam of Peru—Immiscibility with Certain Oils and Fats.—The difficulties encountered in the preparation of ointments containing considerable quantities of balsam of Peru have been the subject of frequent comment. Alblas-Sorber has made experimental inquiry into the causes, and traces the immiscibility of the balsam with certain fats and oils to their *triolein* content, their miscibility being increased in proportion to the inferior content of the latter. Thus castor oil, which contains no triolein at all, is readily miscible with the balsam, as is also croton oil, although the latter can scarcely be taken into consideration on account of its special properties. Linseed oil, containing a characteristic olein, is also miscible, but with difficulty, while such oils as cod-liver, sesame, almond, olive and rape are immiscible. Smooth and stable mixtures of small percentages of the balsam with fats and oils may as a rule be obtained, but when the proportion of balsam is large the latter separates out as a resinous mass. This separation may be prevented by the addition of a small proportion of castor oil, or by the substitution of the latter for a part of the fat or oil directed. Of fats, lanolin is the most readily miscible, and petrolatum, both white and yellow, also forms good ointments even in the proportion of 1 : 2, but liquid petrolatum does not mix well with the balsam, though a good mixture is obtained if a small portion of castor oil is added.—Pharm. Ztg., l, No. 97 (1905), 1023; Pharm. Weekbl., 1905, No. 46.

Balsam of Peru—Adulteration, Detection and Pharmacological Import.—The external use of balsam of Peru as a liniment in cases of itch, etc., has latterly been frequently followed by nephritis. This has been ascribed to adulteration of the balsam, which, according to Utz, is the rule rather than the exception. Turpentine and gurjun balsam appear to be favorite adulterants, and the tests of the (German) Pharmacopœia often fail to detect them. Such adulterated balsams may show a cinnamein-content of 50–60 per cent., and saponification figures which range from 142 to 164; whereas Dieterich found for genuine balsam, 137 to 165; for commercial balsam, 159 to 223; and K. Dieterich found 188 to 196. The physical characters of the cinnamein obtained sometimes indicate sophistication; it should be brown and homogeneous, whereas with turpentine it is often granular, or even solid. The acid number of the balsam is difficult to determine on account of the dark color. Saponification numbers were also unsatisfactory. The refractive index gave more satisfactory results. It was determined by means of an Abbé refractometer to be for pure balsam 1.5862 to 1.578 at

15° C. For gurjun balsam the refractive index is 1.5142; castor oil, 1.4809; paraffin oil, 1.4821. These would, therefore, if present in balsam of Peru, lower the refractive index. On the other hand, perugen, which is a factitious substitute for balsam of Peru, possesses a refractive index of 1.5863, and cannot be detected by this means. Whilst not advocating qualitative reactions as satisfactory, Utz thinks that in this case useful information may be obtained, and recommends the nitric acid test of Cæsar and Loretz as the best. With this test perugen gave an intense olive-green color instead of the golden-yellow yielded by pure balsam.—Pharm. Journ., Feb. 10, 1906, 129; from Pharm. Post, *39*, 21.

Balsam of Peru—Simple Method of Examination.—G. Fromme (Cæsar & Loretz's Report) regards the sulphuric acid test for balsam of Peru as superfluous and, moreover, unreliable. The balsam should make a clear mixture with an equal volume of alcohol. Its specific gravity at 15° C. ranges from 1.140 to 1.153. The saponification and ester numbers should be determined according to the G. P. IV direction. Synthetic balsam of Peru may be recognized by the nitric acid test, which is carried out as follows: 2 Gm. of the balsam are vigorously shaken in a vial with 10 Cc. of petroleum ether, the solution is filtered into a dry porcelain capsule, which must previously be carefully cleaned with sulphuric acid and water, and the petroleum ether is evaporated on a steam-bath, the residual cinnamein being heated for about 10 minutes longer. When cool, 5 drops of nitric acid, sp. gr. 1.38, are added and rapid and intimate mixture is effected by the aid of a carefully cleansed porcelain pestle. Pure (genuine) balsam of Peru yields a golden-yellow color.—Pharm. Ztg., l, No. 73 (1905), 770.

Calabar Beans—Assay.—H. Beckurts recommends the following method for assaying calabar beans: 20 Gm. of the powdered drug (sieve v of the G. P., IV) are shaken frequently during 3 hours with 120 Gm. of ether and 10 Cc. of a 10 per cent. solution of potassium bicarbonate; then 90 Gm. of the ether solution are filtered, one-half of the ether is distilled off, and the residue transferred to a separator by the aid of some of the recovered ether. After adding 10 Cc. of petroleum benzin to prevent subsequent emulsification, the ether solution is shaken out with 10 Cc., and then thrice successively with 5 Cc. of $\frac{N}{10}$ HCl; the acid liquids are united, 45 Gm. of ether and 10 Cc. of a 10 per cent. solution of potassium bicarbonate are added, and the mixture, after several vigorous shakings, is allowed to separate. Then 30 Gm. of the ether solution (corresponding to 10 Gm. of the drug) are mixed with 10 Cc. $\frac{N}{100}$ HCl, 20 Cc. of water and 5 drops of alcoholic iodeosin solution, and the excess of acid is determined by titration with $\frac{N}{100}$ NaOH. Each Cc. of $\frac{N}{100}$ HCl corresponds to 0.00275 Gm. of physostigmine. Under the conditions of this assay method, calabarine, being insoluble in ether, is excluded, while the alkaloids extracted by the ether—physostigmine and eseridine—do not undergo unfavorable change during twenty-four hours. Caustic alkalies, as well as carbonates and sodium bicarbonate, cannot be used for the shaking out of these alkaloids from their acid solutions. There is no troublesome emulsification produced during the direct assay of the beans, but when applying the method to the assay of the extract there is considerable annoyance from this source, while the color-reaction of the indicator, which is quite sharp when operating with the drug, is less distinct when assaying the extract, this being probably due to a partial decomposition of alkaloid during its preparation.—Apoth. Ztg., xx, No. 67 (1905), 670.

Cassia Grandis—Chemical Examination.—Specimens of the bark of *Cassia grandis*, brought from the West Indies, have been examined by E. W. Mann. The drug is commonly known as horse cassia, and although in its essential characters it closely resembles the ordinary cassia, yet it possesses a powerful and disagreeable odor, which would militate against its use as a substitute. An attempt to isolate the odorous principle by steam distillation gave a very small quantity (0.02 per cent.) of a perfectly crystalline, white, volatile substance possessing a combined balsamic and alliaceous odor. The amount of material at disposal was insufficient for further experiments in this direction. The pulp, which was present to the extent of about 26 per cent., closely resembled that of the official cassia. It contained a large proportion of a reducing sugar, and yielded 4.70 per cent. of ash on ignition, the ash consisting mainly of magnesium and potassium sulphates, with some phosphate, etc.—Pharm. Journ., Dec. 9, 1905, 788.

Copaiba—Practical Method of Examination.—G. Fromme finds the solubility tests for copaiba, in absolute alcohol, amyl alcohol, chloroform, and petroleum benzin, liable to be misleading. As a rule the copaiba produces a clear solution with an equal volume of petroleum ether. The determination of the acid and ester numbers also are valueless, unless the absence of colophonium and gurjun balsam has previously been ascertained. The sp. gr. of copaiba at 15° C. may range from 0.970 to 0.990. If a drop of copaiba is carefully heated over the naked flame, the odor of turpentine should not be developed and the residual resin should not be hard and brittle. If 0.9 Gm. of copaiba and 0.1 Gm. of colophonium are heated gently in a test-tube until solution is effected, then 10 Gm. of ammonia water (10 per cent.) added, the mixture well shaken, corked and set aside, a gelatinous mass should not be produced after standing 24 hours, thus determining the absence of colophonium in the original sample. —Pharm. Ztg., l, No. 73 (1905), 770; from Cæser & Loretz' Report.

Copaibas—Color Reactions.—Van Itallie and Nieuwland found that on addition of a small drop of sulphuric acid to a mixture of 1 drop of Surinam copaiba with 1 Cc. of acetic acid anhydride a blue color is produced, while other copaibas did not produce this reaction. They have now repeated the experiment with various copaibas of undoubted source and quality with the following results:

Para copaiba produces a dark blue-green color, which afterwards becomes dark blue-violet.

Bahia copaiba produces a blue color, like Surinam copaiba.

Angostura capaiba a dark violet color.

The authors furthermore find that

Bahia Copaiba in other respects also resembles Surinam copaiba (which see) very closely. It contains 61.93 per cent. of volatile oil, has the sp. gr. 0.9603, gives the saponification number 67.40, and the acid number 57.90.—Arch. d. Pharm., *244*, No. 3 (1906), 163; Pharm. Ztg., li, No. 41 (1906), 461; from Pharm. Weekbl., 1906, No. 16.

Surinam Copaiba—Constituents, etc.—Van Itallie and Nieuwland have determined the constituents of Surinam copaiba by the following method: The copaiba was dissolved in twice its volume of ether and the solution was shaken out with 5 per cent. solution of ammonium carbonate followed by 5 per cent. solution of potassium carbonate. The ethereal solution yielded a mixture of the volatile oils and resenes, which were separated from each other by distillation. The ammonium carbonate solution had dissolved very little, but the potassium carbonate solution yielded on decomposition with diluted sulphuric acid the resin acids in form of a white mass, which was washed several times with warm water, then mixed with an equal volume of alcohol, and dried on the water-bath. The acid number of this mass was found to be 171, the saponification number 177.5; it therefore contained scarcely any esters. The resenes yielded on standing white crystals which, on recrystallization from ether-alcohol were identified as a sesquiterpenealcohol. From this the sesquiterpene was isolated and its molecular weight determined, which proved it to have the composition $C_{15}H_{24}$.—Arch d. Pharm., *244*, No. 3 (1906), 161.

Gurjun Balsam—Yield of Oil and Constants.—A sample of gurjun balsam imported by a business friend direct from the East Indies is described by Schimmel & Co. as being of a greenish-blue color with faint fluorescence, and with transmitted light of a bright brown color. Its sp. gr. was 0.9705; acid number, 7.65; ester number, 0.9; n_D 20°, 1.51532. On distillation with steam it yielded about 60 per cent. of a yellow oil, having a balsamic odor; sp. gr., 0.9236; a_D—79° 6′, n_D 20°, 1.50326; ester number, 0.99; soluble in about 9 and more volumes of 95 per cent. alcohol.—Schimmel's Rep., October–November, 1905, 39.

Jyree Tea—The Leaves of Albizzia Amara, Boiv.—E. M. Holmes says that since 1899 some small leaves have been offered in commerce under the name of "jyree tea," and a specimen was brought to the museum of the Br. Pharm. Society for identification. These leaves are small, evidently leguminous leaflets, about ⅓ inch long, and oblong in shape. They are offered as a remedy for neuralgia, indigestion and insomnia, the leaflets being added to ordinary tea in the proportion of one part to two or three of tea for neuralgia, and one to one or two of tea for insomnia, to be taken after food or at bed-time. These leaflets have been identified at Kew as those of *Albizzia amara*, Boiv., a native of India.—Pharm. Journ., Dec. 16, 1905, 833.

Licorice—Yield of Extract.—According to "Helfenberger Annalen." licorice root, examined during 1904, yielded the following percentages of extract, dried at 100° C., under the conditions indicated: When extracted with boiling water, 27.96 to 31.9 per cent.: with cold water 26 to 28 per cent.; with cold water containing ammonia, 28.08 to 31.68 per cent.; with a mixture of 49 p. alcohol, 48 p. water, and 3 p. ammonia water, 26.61 to 30.95 per cent.—Pharm. Ztg., l, No. 79 (1905), 836.

Licorice Root—Test of Quality by Incineration.—H. Wippell Gadd and Sidney C. Gadd observe that powdered licorice root is sometimes grossly adulterated. A microscopical examination is the best means of determining the purity or otherwise of a particular sample, but the estimation of the incombustible matter is a ready if rough test of quality. One hundred grains ignited in a tared platinum or thin nickel dish, until the whole of the carbon has been consumed, should leave a light-gray residue, weighing not more than four grains.—Pharm. Journ, Sept. 30, 1905, 438.

Licorice Root—Influence of Age on Constituents, etc.—A. Gawalowski, who has many year's experience in the manufacture of licorice products in Moravia, where licorice is largely cultivated, gives some interesting information concerning the constituents of the drug, the variation due to age, and the influence upon the products. The following differences in constituents, calculated on the dry substance, have been observed between freshly gathered roots and roots that were two years old:

	Roots when	
	2 years old.	freshly gathered.
Lignin	20 per cent.	21 per cent.
Starch	22 "	24 "
Mucilage and protein substance	40 "	41 "
Glycyrrhizic acid	9 "	7 "
Resin and coloring-matter	3 "	2 "
Wax (fat)	2 "	1 "
Ash	4 "	4 "

In the two-year-old roots the water-content varied from 14 to 18 per cent., in the freshly-gathered from 48 to 52 per cent. The coloring-matter resembles that of turmeric in many respects, but is not browned by boric acid. Together with the resin and mucilage it determines the color of the licorice preparations, which are also affected in purity and delicacy of taste by these as well as the decomposition products of the starch resulting during their manufacture. The production of pure preparations of *glycyrrhizin* becomes possible only if these constituents are carefully eliminated, and by observing certain precautions the author has succeeded in preparing such, resembling light honey in color. The author has also obtained crystalline alkali glycrrhizates, having a biscuit-yellow color and a very sweet taste.—Apoth. Ztg., xxi, No. 20 (1906), 193; from Pharm-Post, 1906, 130.

Pithecolobium Bigeminum, Mart.—*Saponin a Constituent.*—L. Rosenthaler finds that the bark of *Pithecolobium bigeminum*, Mart., in which Greshoff has determined the presence of an alkaloid, pithecolobine, contains also saponin, and that it may therefore be used for washing purposes, as are the rinds of the fruits of this plant. The bark, which is derived from Sumatra and Java, is described by the author in Ztschr. d. Oesterr. Ap.-V., 1906, No. 11.—Pharm. Ztg., No. 31 (1906), 352.

Tamarinds — Character of Acid Constituents.—The investigations of Frz. Adam have determined that the acidity of tamarinds is due to the extent of 90 per cent. to tartaric acid, which is partly in combination as acid potassium salt. Besides tartaric acid, the fruits contain mainly malic acid, some lactic acid, and traces of volatile acids; but citric acid could not be detected by the usual methods of its determination, and is probably not a constituent.—Pharm. Ztg., l, No. 71 (1905), 753; from Ztschr. d. Oesterr. Apoth.-V., 1905, No. 33–34.

Tamarind Pulp—Composition.—The original analysis of tamarind pulp by Vauquelin is criticised by Remeaud as being unreliable in the light of present-day methods of determination. The latter has therefore redetermined the constituents of tamarind pulp, using for the purposes of comparison tamarind pulp prepared directly from the fruits, the crude pulp of commerce, and the latter after purification, with results as follows:

	Tamarind Pulp.		
	From Fruit.	Crude.	Purified.
Total acidity	11.729	15.888	15.340
Tartaric acid (free)	5.711	7.359	7.034
Acid potassium tartrate	6.055	6.575	7.34
Invert sugar	42.307	32.—	34.284
Saccharose	0.669	—	0.46
Pectin substances	0.352	1.379	—

—Pharm. Ztg., li, No. 41 (1906), 461; from Journ. de Pharm. et Chim., 1906, No. 9.

TEREBINTHACEÆ.

Juglans—Distribution of Juglone and Method of Determining its Presence.—Brissemont and Combes have determined that contrary to the opinion expressed by previous investigators, juglone (oxynaphthoquinone, 1–4–8) is found to exist as such, in the green parts of various species of *juglans*, and in other members of the same natural order. Its presence may be demonstrated by simply macerating the unbruised or lacerated organ in chloroform; the golden-yellow chloroform extract thus obtained affords yellowish-red crystals of juglone when treated with an equal volume of petroleum ether and set aside. The solution gives a characteristic color, at first violet, then red, on contact with a few drops of ammonia; and the ethereal solution gives a typical red copper salt when shaken with dilute cupric sulphate solution. It is very widely distributed in the natural order of juglandaceæ, and also in the separate organs of individual plants.—Pharm. Journ., Jan. 13, 1906, 35; from Compt. rend., 1905, *141*, 838.

Myrrh—Source and Constituents.—A. Tschirch and W. Bergmann have determined the constituents of the official myrrh (Herabol-myrrh or Somali-myrrh), the information on this, as well as the specific botanical source, being still quite unreliable. Regarding the latter, it is true that the various pharmacopœias have positively accepted certain species, but they do not agree among each other. The authors consider it positive only that the herabol-myrrh is derived from a species of *Commiphora*, in North Africa but believe that the precise species remains to be determined, although they are inclined to the opinion that this will prove to be *C. Playfairii* (Hook. fil.) Engl. (= *C. myrrha* [Nees] Engl.): The sample of herabol-myrrh examined had the following composition: Soluble in alcohol 28–30 per cent., of which 5 per cent. was insoluble in ether; (composed of α-herabo-myrrholol 3 per cent., and β-herabo-myrrholol,) and 21–23 per cent. was soluble in ether (composed of α-herabo-myrrhol 4 per cent., β-herabo-myrrhol 2 per cent., herabo-resin 6 per cent., secondary α herabo-myrrhol 2 per cent., volatile oil 6 to 7 per cent., secondary volatile oil 1.5 per cent.) Insoluble in alcohol 61 per cent. composed of gum and enzyme. Impurities, 3–4 per cent. Water, 5 per cent. The characteristic bitter taste of myrrh is doubtless due to a bitter principle; all attempts to isolate this have failed, but will be continued.—Arch. d. Pharm, *243*, No. 9 (1905), 641–654.

Myrrh—Magnesium Content of Ash a Test for Admixtures.—F. H. Alcock obtained from resin-free and air-dried myrrh 6.315 per cent. of ash on incineration, which on examination was found to contain 73.47 per cent. of calcium carbonate and magnesium pyrophosphate equivalent to 15.4 per cent. of magnesium carbonate. The remainder of ash soluble in N. hydrochloric acid was made up of alkali, with traces of other radicals; the insoluble portion amounted to 7.52 per cent. His results seem to show that the determination of the amount of magnesium salts in the ash of myrrh might prove to be an important test for admixed gums in genuine myrrh, especially when in form of powder, in which, according to Moor and Priest, it has been known to vary from 3.8 to 17 per cent.—Trans. Brit. Pharm. Conf. (Yearbook of Pharm.), 1905, 422.

RHAMNACEÆ.

Cascara Bark—Habitat, Collection, Supply, etc.—A. C. Zeig gives some interesting information concerning the "Cascara Industry" on the Pacific coast. Although the habitat of *Rhamnus purshiana* embraces the northern coast of counties of California, and extends north to British Columbia, very little or no bark was collected north of the 45th degree of north latitude prior to 1904. The greater quantity of the drug that found its way into the eastern and foreign market was collected in the valleys of the Coast Range Mountains in Oregon, more particularly in Benton, Lane and Linn counties. On the western slope of the Coast Range, the Coos Bay region in the vicinity of Marshfield, Oregon, contributes to the annual supply some of the best bark. The bark collected in Humboldt and Mendocino counties, Cal., and Coos and Curry counties, Oregon, reaches the market through Fort Bragg, Arcata, Port Orford and Marshfield, small ports along the northern California and Oregon coast. The quantity collected in that section is not very large and does not visibly affect the annual supply. During the season of 1904 an unusually large crop of the bark was collected in the vicinity of Chehalis, Washington; in fact, it seemed as though the center of the cascara industry had shifted from Corvallis, Oregon, to Chehalis, Washington. The shipments from Chehalis, Washington, aggregated 800,000 pounds, from points in southwestern Washington about 200,000 pounds, and from Oregon points—Corvallis, Albany, Eugene and Lebanon, 500,000 pounds, making a grand total for the year 1904 of one and a half million pounds. The author describes the method of collecting the bark and preparing it for market, as practiced at Lebanon, Oregon, the test being illustrated by half-tone pictures showing the method of peeling, drying and crushing the large strips which are taken from the trunks and branches by the wasteful method of collection. This causes an annual destruction of 100,000 trees or more; for no new bark will form when the strip taken off is two inches wide, nor can the tree be saved. Regarding the difference in appearance sometimes noticeable in the drug, this is principally due to climatic influences of the locality where it is grown, also to the manner of drying. Thus the bark growing in the valleys of the Coast Range Mountains in Oregon and Washington is generally covered with moss, which has to be removed before the bark is peeled, while the California bark presents a smooth, clean epidermis, free from moss.—Pharm. Era, Aug. 17, 1905, 150–151.

Cascara Bark—Method of Gathering and Curing in Oregon.—J. Lee Brown describes the method of peeling, drying and preparing cascara bark for the market as witnessed by him in Oregon, his paper being illustrated by a half-tone picture showing the drying racks and general appearance of a cascara camp. The first step in peeling a tree is the removal of the mosses and lichens from the trunk and limbs, which is sometimes more laborious than the removal of the bark. This having been done, the trees are cut around the trunk as high as convenient and down as near to the ground as possible with a specially-shaped, crooked knife, the bark being removed in as large pieces as possible. The tree is next cut down and the bark entirely removed, except from the very small limbs. The green bark is now transported to the camp and placed over the rudely-constructed racks to dry, the inner side of the bark down so as to avoid the darkening effects of the sun. The drying requires from twelve to forty-eight hours, according to the weather, the bark being then broken up into the small pieces in which it appears in market by a variety of contrivances, the one most generally used being a slat-arrangement through which the bark is passed, the upper set of slats being brought down with considerable force against the lower, thus breaking the bark into small pieces. The destructive method of collecting cascara bark will probably cause a scarcity of the drug in the future. In fact, "chittem" trees which grow in proximity to ranches and settled communities have been largely peeled and exterminated, so that it has become necessary for the prospective peeler to go back into the virgin forest and establish his camp.—West. Drugg., Nov., 1905, 701.

Frangula Bark—Valuation.—Using the colorimetric method of Tschirch for the estimation of emodin in rhubarb (which see), Panchaud has determined the percentage of emodin in old and young frangula bark. The old bark (1.7 to 1.85 Mm. thick) contained on an average 1 per cent. of emodin, while the young bark (1.1 to 1.2 Mm. thick) yielded an average of 3.8 per cent.—or 3.3 per cent., if it contained a few thick quills intermixed with a large preponderance of young, thin-quilled bark. As a practical observation the author mentions that noteworthy differences are evident during the extraction of the two kinds of bark, the older barks retaining a purple-red coloring-matter, whilst the younger barks become white after extraction. Furthermore, the author finds that in some samples of bark, depending on the age, the resultant alkaline solutions are not always a bright cherry-red, and not comparable with the normal emodin solutions or dilutions. If, however, the original solution (1:10,000) is allowed to stand 12 to 24 hours, and the dilutions are then made as before, they come out bright and are then comparable with the dilutions of the normal emodin solution. Finally, the author has experimented to determine, with the aid of Tschirch's colorimetric method, to what extent water alone is capable of extracting the anthraglucosides and the free oxymethylanthraquinone from frangula bark. He found that even after prolonged boiling, repeated three times, only about one-half the total active constituents could be extracted by water alone.—Schweiz. Wchschr. f. Chem. u. Pharm., xliii, No. 38 (1905), 518.

Frangula Bark—A New Sophistication.—W. Mitlacher calls attention to a new sophistication of frangula bark observed in a parcel derived from

Bosnia. Although the botanical source of this sophistication has not been determined with certainty, it seems to be the bark of *Rhamnus carniolica.* The fresh bark occurs in silver-gray to gray-brown pieces, yellow to red-brown on the under side, the older pieces exhibiting a thick-fissure bark, which markedly distinguishes it from genuine frangula bark, since the latter is devoid of a pronounced cortical layer. The differentiation, however, requires a microscopic examination of the tissues of the bark, the necessary distinctive features being described by the author.—Pharm. Ztg., l., No. 104 (1905), 1096; from Pharm. Post, 1905, No. 52.

EUPHORBIACEÆ.

Anda—A Useful Brazilian Tree.—T. Peckolt says that the "anda tree" (*Johannesia princeps*) is much valued by the natives of Brazil, who make use especially of the fruits. The seeds, which are official, contain 29 per cent. of a laxative fixed oil; they may be used in the form of an emulsion, but in that case the embryo must be removed, as it contains a toxic substance allied to, possibly identical with, ricin. The oil, obtained by pressing the seeds, is free from toxicity, and acts, in 50-drop doses, as a laxative. In addition to the oil, the seeds contain three resinous substances (about 4.5 per cent.), proteids (30.4 per cent.), mucilage, etc. The leaves and bark also contain fixed oil and resins.—Pharm. Journ., Dec. 30, 1905, 910; from Ber. d. D. Pharm. Ges. *15*, 225.

Croton Tiglium—Kino-like Exudation.—David Hooper calls attention to a sample of "gum of *croton tiglium*" presented to the Indian Museum in July last by the district forest officer, South Salem, Madras Presidency. The specimen was highly colored for ordinary gum, and after examination was found to be an astringent secretion or kino. It was in brittle fragments of a black color, with garnet-like edges; the taste was styptic, and it dissolved in water and rectified spirit with an acid reaction. It had the following composition:

Water	17.2
Tannin	65.0
Soluble non-tannins	6.8
Insoluble fibre	0.5
Ash	10.5
	100.0

The aqueous solution gave the same reactions with ferric and ferrous salts, plumbic acetate and mineral acids as Malabar kino. The amount of ash is rather large for kino, and is accounted for to some extent by the presence of earthy matter or sand. The district forest officer, on being written to for further information on the yield of gum, and for a larger sample, replied that the small quantity (weighing about one ounce) had been collected at the base of about thirty trees, where it appeared to have exuded naturally. The tree known as *Croton tiglium*, Linn., is the "Katta Kottai" of the Tamil people, and the seeds are the source of the croton oil of commerce.—Pharm. Journ., Oct. 7, 1905, 479.

Euphorbium—Characteristic Reaction.—The following characteristic reaction of euphorbium is mentioned in a recent drug report of Julius Grossman, Hamburg: If a filtered solution of euphorbium in petroleum ether is carefully poured upon diluted sulphuric acid (1:100) containing a drop of concentrated nitric acid in 20 Cc., a very decided blood-red color is developed at the point of contact of the two solutions, which on shaking is distributed throughout the acid and is not changed to a brown color until standing 1 or 2 days. This reaction readily distinguishes euphorbium from galbanum.—Pharm. Centralh., xlvi, No. 33 (1905), 651.

Euphorbium—Distinction from other Resins and Gum Resins.—Utz, referring to the above reaction of euphorbium, points out that other resins and gum resins give similar reactions with the reagent named. Galbanum, treated in the same way, produces a lemon-yellow ring, and this color pervades the entire acid layer after shaking. The petroleum ether solution of turpentine produces a blood-red ring, and on shaking the acid gradually also becomes red, but turbid, whilst with euphorbium the solution remains clear. Colophonium forms an orange colored ring, and on shaking a red but turbid liquid is produced. Myrrh and asafœtida produce lemon-yellow rings, and the liquids become turbid; olibanum produces an orange-yellow zone and color.—Apoth. Ztg., No. 9 (1905), 691.

Para Caoutchouc—Action of Atmospheric Air.—Edgar Herbst has experimented to ascertain the effect of atmospheric air upon para rubber, by passing dry and filtered atmospheric air through a boiling solution of pure caoutchouc in benzol under a reflux condenser, replacing the benzol lost by vaporization from time to time. A colorless solution of 6 Gm. of caoutchouc in 600 Cc. of benzol, after heating for 140 hours had turned yellow and was so changed that the addition of alcohol failed to precipitate the caoutchouc. The nature of this change will be the subject of further investigation and report.—Pharm. Ztg., li, No. 33 (1906), 374; from Ber. d. D. Chem. Ges., 1906, 523.

The Lac Industry of India.—"A Stick of Sealing Wax," is the title of a communication of more than usual importance by Sir George Watt, whose remarks on this interesting subject are mainly directed to narrating personal knowledge and experience gained after a life-long residence in India, during which it became his official duty to investigate the materials of Indian trade and industry. His subject is considered under the the following grouping: (1) The History of Lac; (2) The Origin of Lac; (3) The Production of Lac; (4) The Manufacture of Lac; (5) The Uses of Lac; (6) The Trade in Lac. This paper is interestingly supplemented by a paper of John C. Umney, "On the Commercial Grades of Lac, and

Their Valuation," and may be consulted in Pharm. Journ., Nov. 11, 1905, 646–654.

Artificial Shellac—A New Substitute.—In a previous communication, K. Dieterich had called attention to the occurrence of an artificial shellac on the market in considerable quantities, which appears to have been composed essentially of an acoroid resin. He now calls attention to a new shellac substitute, which is described as possessing none of the properties of shellac, and is evidently an artificial compound of various resins. Moreover, the various specimens of artificial shellac appear to differ among each other, and it is evident that so far no artificial product has been obtained that can serve as the equivalent of true shellac.—Pharm. Ztg., l., No. 64 (1905), 672; from Helfenberger Annalen.

Jatropha Curcas—Yield and Properties of the Oil from the Seeds.—According to T. Peckolt the kernels of the ripe seeds of *Jatropha curcas*, a plant widely distributed and cultivated in the hot and temperate parts of Brazil, yield to cold pressure 22 per cent. of colorless, odorless fixed oil, the taste of which resembles that of castor oil; by hot pressure 40 per cent. may be obtained, and by petroleum spirit 44 per cent., but in the latter case the oil has an acrid taste, due to a little resin which is simultaneously extracted. The seeds, free from their cotyledons, or slightly roasted to remove the poisonous principle, curcin, are employed in doses of two to five seeds as a purgative. The oil has no vesicating properties like croton oil. The statement current in the literature that the stem of the tree yields a caustic milky juice is incorrect; only a small quantity of a turbid yellowish liquid can be obtained, which is devoid of any trace of caustic action. A decoction of the leaves has hemostatic properties, and is also said to act as a laxative.—Pharm. Journ., June 30, 1906, 757; from Ber. d. D. Pharm. Ges., *16*, 176.

URTICACEÆ.

Cannabis Indica—Comparison of African and French Variety with the Indian Drug.—E. M. Holmes calls attention to two specimens of *Cannabis indica*, the one grown in Uganda the other in the north of France, which were recently presented to the Museum of the Br. Pharm. Society. Both possessed a fine green color, and had a much brighter and cleaner appearance than the Indian drug, but preparations made from the three drugs by Mr. J. C. Umney when pharmacologically examined by Dr. W. E. Dixon, of the Physiological Laboratory at Cambridge, who has made the subject of *Cannabis indica* one of careful study, show that the Indian drug is the most active. The other two are also active, but not nearly so effective as the Indian sample, the African being probably a little more active than the French variety, but the difference is not very great. Mr. Holmes adds that under these circumstances a warning note seems necessary to the effect that these varieties should not be used for B. P. preparations. The deficiency in odor and absence of resin sticking the flower and fruits together, and the unusually bright color, will be sufficient to identify these little active forms of the drug.—Pharm. Journ., Dec. 16, 1905, 834.

CONIFERÆ.

Coniferous Woods—New Reaction.—Discussing the color-reaction of the lignified cell-walls with different reagents, O. Linde observes that if dry pieces of wood are immersed in 63–70 per cent. sulphuric acid they will assume first a yellow, then a greenish-yellow, and finally a grass green color, whilst the acid remains colorless. If then sections of coniferous wood, which have been colored green, as explained, are immersed in water, the color is at first changed to distinct blue, then blue-gray, and finally is completely discharged. This reaction is produced quite as well with sections of coniferous wood which have been deprived of resin and volatile oil. The addition of phenol increases the reaction-power of sulphuric acid, for if a section of coniferous wood is immersed in sulphuric acid of about 48 per cent., it fails to produce the green color described, but if phenol is added the wood, although quite slowly, assumes a blue color. The only other woods that give this reaction are those of *Lonicera Periclymenum*, *Populus*, *Acer platanoides* and *Robinia Pseudacacia*, whilst similar but not as distinct reactions are obtained with the ligneous portions of *Solanum Dulcamara*, *Tilia grandifolia*, *Betula alba*, *Quercus pedunculata*, *Quassia amara*, *Picrasma excelsa*, *Fagus silvatica*, *Carpinus Betulus*, *Guaiacum officinale*—the last three giving a more brown than green coloration, while the other members of the second group do not become green with 63 per cent. sulphuric acid alone.—Arch. d. Pharm., *244*, (1906), 57.

Juniperus Thurifera, var. *Gallica—Description.*—Dr. M. T. Masters, a well-known authority on Coniferæ, having referred E. M. Holmes to a number of recently published descriptions of *Juniperus thurifera*, var. *Gallica* (not obtainable in the "Index Kewensis,") the latter communicates several descriptions of this new variety, among which the following, by Vidal, is the most complete and recent (1897): A diœcious tree, 2 to 3 metres in height, the branches furnished with a gray bark, and bearing erect branchlets. Leaves small, green or glaucous; opposite and decussate attached to the twig by half their length, lanceolate, and acute at the free extremity, furnished at the back with an elliptic gland; catkins oval, oblong, truncate, born on short, straight lateral branchlets. Galbuli solitary, drooping, with a reflexed peduncle, globular, 10 to 12 Mm. in diameter, formed of 4 to 6 united scales with obtuse apexes, glaucous at first, blue in drying, spotted with chesnut in the autumn, and bluish-black and shining when mature; flesh yellow, soft, and agreeable to the taste; nucules 1 to 3, slightly striate with a prominent apex, and less angular than in *J. thurifera*. The odor of the plant is resinous, and very weak.—Pharm. Journ., Dec. 16, 1905, 830.

Pinus Maritima—Constituents of the Oil from the Buds.—According to Belloni the oil from the buds of *Pinus maritima*, yielded on fractional distillation a portion between 205° and 250° C., from which he isolated l-borneol by crystallization from petroleum ether. The crystals melted at 205° C.—Pharm. Ztg., li, No. 41 (1906), 461; from Boll. Chim. Farm., 1906, No. 5.

Manila Copal and Kauri Gum—Character of Volatile Oils.—L Schmoelling has investigated the characters of the volatile oils which are eliminated in considerable amount from Manila copal and kauri gum when these resins are fused in the process of varnish-making. Until recently these volatile oils have not been collected or used, and even now the practical application of these by-products is limited chiefly to the use as fuel.

Kauri Oil is a very mobile yellow liquid, with a pleasant, aromatic odor; sp. g. 0.8677 at 15° C.; optically inactive; acid value, 3.0; ester value, 1.9; iodine value, 188.9. The oil is only sparingly soluble in alcohol, and is not completely dissolved by petroleum ether. On fractionation the greater part distils between 150°–160° C. This fraction gives a crystalline compound with hydrochloric acid and sodium nitrate, but dry hydrochloric acid gas affords no crystals, nor is a crystalline bromo-compound obtained.

Manila Copal Oil is a reddish liquid, darkening in tint a few hours after distillation; sp. g., 0.9069; entirely soluble in alcohol and in ether, from which it is thrown out of solution on adding petroleum ether; acid value, 28.3; ester value, 17.4; iodine value, 230.4; when exposed to the air the acid value diminishes, owing to volatilization of acid. No definite fractions could be separated on redistillation. Kauri oil redistils over unaltered in a current of dry steam; but Manila copal oil, similarly treated, only gives about 50 per cent. of rectified oil, which has a less pronounced odor and a sp. g. 0.8567 at 15° C.—Pharm. Centralh., xlvi, No. 48 (1905), 916; from Chem. Ztg., 1905, 955.

Savin Leaves of Commerce—Comparison.—The observations of Umney and Bennett concerning the distinctive characters of a French oil of savin (see *Volatile Oils*, under "Organic Chemistry"), which proved to be derived from the Mediterranean species of savin,

Juniperus Phœnicea, has doubtless given the incentive to a comparison of savin leaves of commerce, by William G. Freeman, to whom a specimen of the plant from which the oil was distilled had been submitted by E. M. Holmes, for microscopic examination, this being necessary because of doubt concerning its reference rightly to the species mentioned, or to either *J. sabina*, var. *tamariscifolia*, or to *J. thurifera*. Any one who has studied the coniferæ knows how difficult it is to identify a species from a twig alone—such having been submitted in this instance, without specimens of the fruit and without knowledge of the form and habit of growth. Leaving the details for consultation in the original paper, the following key is suggested by the author to distinguish the three species of *Juniperus* in the absence of fruits :

Stone cells absent from the mesophyll ; leaves decussate ; *Juniperus sabina.*

Stone cells present in the mesophyll ; leaves decussate ; *Juniperus thurifera.*

Stone cells present in the mesophyll ; leaves spirally arranged ; *Juniperus Phœnicea.*

In the latter the sclerotic or "stone" cells are large and more abundant than in *J. thurifera ;* and relying on the three points of difference as established by Mongin, namely : (1) the spiral and not decussate arrangement of the leaves ; (2) the presence in the mesophyll of sclerotic cells ; and (3) the continuation of the hypodermis over the exterior surface of the resin duct, there appears every reason to believe that the material is correctly referred to *J. Phœnicea.*—Pharm. Journ., Dec. 16, 1905, 829.

B. ANIMAL DRUGS.

Cochineal—Commercial Source, with Particular Reference to the Mexican Variety.—An inquiry concerning Mexican cochineal and the difficulty of obtaining a commercial specimen, led E. M. Holmes to seek some recent information on the subject, with results which prove quite interesting. From these it appears that almost all the cochineal comes from the Canary Islands, the official statistics, which support a statement of a London firm largely engaged in the importation of this drug, showing that Teneriffe has supplied from 2,000 to 3,000 cwts. annually during the years 1900 to 1904, whereas all other countries contributed only from 83 to 167 cwts. to the British market. The other countries mentioned are probably Guatemala, and probably Honduras and Mexico, these three kinds being mentioned in the London market twenty-five years ago. The names applied in commerce to different qualities of cochineal seem to differ according to the fancy of the broker or exporter. Broadly speaking, the terms silver grain, black grain, and granilla are used, but there are intermediate qualities variously designated as gray, black-gray, silver-gray, silver-black, rosy-black, red, and foxy, and these again may be qualified by the terms fair, bold, fine, etc. The so-called "original grain" consists of females and young insects, and the latter when sifted out form granilla, which is only worth a sixth or eighth of the price of the mature insect. The color is due to the mode of preparation for the market. The most valuable variety is known as "Madres," and consists of the female insect of the first brood collected in March after the young are hatched, since weight for weight they yield more color than before the young have left their mothers. This variety is generally preferred for the manufacture of carmine. These insects present a very concave undersurface, instead of the plump appearance of ordinary silver-grain cochineal. The term zacatillo is applied in Mexico apparently to the same commercial variety. While these are collected in the spring, the ordinary cochineal is collected in August or September, before the young have left the mother. At this time of the year they possess more of the waxy coat than in spring. The black-grain usually obtains a higher price than the silver-grain, but both are sometimes adulterated. Regarding Mexican cochineal Mr. Holmes mentions that a paper on granilla was read before the Students' Association here in 1892 by Mr. G. A. Shaw, in which he pointed out that a specimen in the museum of the society could be distinguished as of Mexican origin by the fact that the elytra, or wing-cases, of the small beetles *Hyperaspis connectens* and *H. trimaculata* were found in it, since these insects are known only from Mexico.—Pharm. Journ., Mar. 17, 1906, 341.

Cochineal—Quality of a So-called "Highest Grade" Sample.—Lyman F. Kebler observes that in the course of examinations made at the Bureau of Chemistry, in connection with the testing of chemical reagents, there was met a sample of cochineal which contained 21.89 per cent. of ash, chiefly talcum, and had a coloring equivalent of 75. The coloring equivalent of the best grade of cochineal is taken as the standard, and is arbitrarily represented by 100. The ash should never exceed 6 per cent. Some writers state that a majority of the commercial specimens far exceed this limit of ash, but their results were undoubtedly obtained from adulterated goods. It was clearly evident that the cochineal in question was neither of the quality ordered, the best grade, nor of the quality which it was represented to be by the label, viz., the "highest grade," and the manufacturer was so informed. But if the article supplied to the Bureau of Chemistry represents the highest grade "as supplied to the drug trade," what must be the quality of the poorest grade? A recent case answers this question fully. An up-to-date druggist forwarded to the drug laboratory a sample of cochineal which on examination was found to contain 39.14 per cent. of ash, and possessed a tinctorial value of 20. The sample was not only silvered with talcum, but was undoubtedly silvered for the express purpose of concealing its inferior quality.—Drugg. Circ., May, 1905, 162.

Yellow Wax—Examination.—In concluding a lengthy paper on the nature and methods of detecting the adulterants of yellow beeswax, running through several numbers of the "Pharmaceutische Centralhalle," Dr. P. Bohrisch and Rudolf Richter sum up the practical outcome of their studies as follows: As a preliminary examination it suffices in most cases to determine the specific gravity, and to apply the two qualitative tests of the G. P., IV, known as the soda-test and the alcohol-test. If these reveal no suspicious conditions, the presence of gross adulterants is improbable, but if the results obtained are not as may be expected from a pure wax, it becomes paramountly necessary to apply Hübl's test (as modified by Berg, which consists in saponifying for 3 hours on a boiling water-bath), or, if extreme accuracy is not required, the cold saponification method of Henriques. In doubtful cases the melting-point and the Buchner number, possibly also the iodine number, may well serve to determine the nature of the adulterant.—Pharm. Centralh., xlvii, No. 16 (1906), 313.

New Zealand Honey—Poisonous Sorts.—W. Kühn calls attention to the poisonous character of some New Zealand honeys, which exert toxic effects upon the stomach, the kidneys or the brain, depending upon the poisonous plants visited by the bees.—Pharm. Ztg., l, No. 61 (1905).

Honey—G. P. Test for Dextrin.—According to K. Dieterich the test of the G. P., IV., for the presence of dextrin—the formation of a clear mixture with 2 parts of alcohol—is too exacting. He has found 10 parts of pure honey, which formed a clear mixture with 18 parts of alcohol, to become turbid on the addition of 20 parts. Moreover, the method of admixture is not a matter of indifference. A pure honey, to which 2 parts alcohol are added at once, may produce a permanent turbidity, whereas the same honey will form a clear mixture with the same quantity if the alcohol is gradually added.—Pharm. Ztg., l, No. 64 (1905), 672; from Helfenberger Annalen.

Cod Liver Oil—New Reaction.—S. Vreven describes a new color reaction of cod liver oil as follows: About 5 Cc. of the oil and 5 Cc. of ether are added to 25 Cc. of alcohol (92–98 per cent,); the mixture is allowed to stand until the precipitate produced has subsided, and the clear liquid is then decanted into a white capsule. On the addition of fuming nitric acid by drops, a fine sky-blue color is developed, which, however, soon disappears.—Pharm. Ztg., l, No. 26 (1906), 403; from Annal. de Pharm., 1906, 97.

Cod Liver Oil—Non-turbidity at 0° C. a Questionable Requirement.—Moreau and Biétrix discuss the pharmacopœial requirement that cod liver oil shall not become turbid when exposed to a temperature of 0° C. They find that pure, genuine cod liver oil, from *Gadus Morrhua* and other species of *Gadus*, which may be obtained perfectly bright and in an otherwise satisfactory condition, will not stand this test, becoming turbid when exposed to a temperature of 0° C. The official requirement has therefore led the Norwegian producers of cod liver oil to expose this oil to the severe cold of winter prevailing in the northern latitudes of its production, with the result that it is usually chilled far below the required point, and thus, losing a more or less variable but large proportion of its natural constituents, cannot be regarded an absolutely natural product. To what extent this influences the medicinal value of the oil the authors do not venture to explain.—Pharm. Ztg., l, No. 79 (1905), 834; from L'Union Pharm. 1905, No. 9.

Cod Liver Oil—A New Color Test.—Dr. O. Vogt finds the color test of the G. P., IV (sulphuric acid) and Kremel's reaction (fuming nitric acid) insufficient, and liable to be misleading for the distinction of true cod liver oil from train oils and other fish oils. He therefore proposes a third color test, which is based upon Liebermann's cholestrin test, and is carried out as follows: To a cooled mixture of 20 drops of chloroform, 40 drops of acetic acid anhydride and 3 drops of sulphuric acid, in a dry test-tube, add 3 drops of the oil. On shaking, an intense blue color is developed if the sample is true cod liver oil, which rapidly fades, but within 20 to 40 seconds assumes a permanent olive-green color. Train oils, under the same conditions, give a red-brown color, changing after a time into pale yellow-brown to greenish-yellow. Mixtures of train oil and cod liver oil, up to 50 per cent., may give the blue color reaction, but fade rapidly, becoming colorless or gray, and do not change until some time afterwards to yellowish-green and, finally, yellow-olive-green. The oil of haddock livers, which is admitted by the tests and requirements of the G. P., IV, does not conform to this test, however. A dirty red-violet to brownish color is at first produced, and this after some time changes to a brownish-green. The author recommends that in examinations of cod liver oil all three tests be applied and carefully compared with parallel tests made upon authentic material. —Schweiz. Wschr. f. Chem. u. Pharm., xliii, No. 49 (1905), 674.

Cod Liver Oil—Official Congealing Point and Definition.—Referring to the preceding observation of Moreau and Biétrix that absolutely pure cod liver oils may congeal more or less at a temperature of 0° C., and the oils meeting the requirement of the G. P., IV, in this respect, may have been deprived by refrigeration of a portion of their solid constituents, L. Barth calls attention to the desirability of a more explicit official description, and whether cod-liver oil so treated or natural cod liver oil is to be supplied. Furthermore, it should be stated in what manner the congealing point shall be determined. In his own experience this may vary from 0° and 3.5° C., and may result in a few minutes or not until after several hours, depending on the method of refrigeration.—Pharm. Ztg., l., No. 96 (1905), 1010; from Bull. des Sc. Pharm. 1905, No. 10.

Viper's Eggs—Venom Content.—According to C. Phisalix the eggs of *Vipera aspis* contain venom. The expressed vitellus when injected into guinea pigs gives rise to symptoms exactly similar to those following snake bite. The amount of the egg-yolk necessary to produce death is 2 Cc., while that of viper blood is 4 Cc., showing that the toxin is accumulated in the egg. Very small ovules were not found to contain any appreciable quantity of venom, nor was it found to be accumulated in any other organ of the body except the eggs.—Pharm. Journ., Sept. 16, 1905, 387; from Compt. rend., 1905, *140*, 1719.

Serpent Venom—Value of Permanganate as Antidote.—The value of potassium permanganate as a remedy and antidote for the bite of venomous serpents, has been demonstrated in a number of recent cases reported by Captain Rogers, of the Indian medical service, in the Indian Medical Gazette of Calcutta for February, 1905. These cases, due to the bites of Russell's Viper, or the cobra, were treated by the method recommended by Sir Lauder Brunton (see Proceedings, 1904, 977). After making free crucial incisions of the bitten part, the wound was thoroughly flushed with a hot solution of potassium permanganate, and then bandaged. Recovery occurred in each case, although the cauterant action of the hot solution of potassium permanganate delayed the complete healing process of the wounded part for about three weeks.—West. Drugg., July, 1905, 417.

Adeps Lanæ—Necessity of Applying Tests of Identity.—According to Endlicher commercial adeps lanæ should always be identified by the pharmacopœial cholestrin test, since it is frequently substituted in the (Austrian) market by products intended for cosmetics, which contain no woolfat at all.—Pharm. Ztg., li, No. 28 (1906), 321; from Pharm. Post, 1906, No. 7.

Woolfat—Splitting up into Ready and Difficult Water Absorbable Fractions.—Dr. J. Lifschütz has secured a patent on a process by which woolfat is split up into two portions, the one characterized by largely increased power to absorb water, the other by correspondingly decreased power. The process depends on the fact that when solutions of woolfat are exposed to the action of animal charcoal for some time the latter splits up the woolfat into two portions, which may be separated from the charcoal and from each other by means of suitable solvents. In a general way it may be said that the fraction possessing increased power of absorbing water is no longer soluble in benzin, but may be dissolved out by means of alcohol, chloroform, tetrachloride of carbon, ether, acetone, bisulphide of carbon, etc., whereas the portion possessing decreased absorbent power remains readily soluble in benzin. In the practical process, for instance, 160 Kgm. of woolfat are dissolved in 900 liters of benzin; the solution is poured upon freshly calcined animal charcoal and heated during 5 or 6 hours at 50°–60° C. The solution is then drawn off and the residual charcoal washed with benzin until this no longer dissolves anything. The benzin solution is distilled and yields as residue a fat which has only very moderate water-absorptive power. The residual charcoal when exhausted with alcohol then yields a solution which on distillation leaves a very tough and adhesive fat-like body, possessing the property of absorbing water so freely that a mixture of 2 parts with 98 parts of paraffin ointment is capable of absorbing very large quanties of water.—Pharm. Ztg., l, No. 85 (1905), 899.

Musk—The Odorous Principle a Ketone.—The researches of the chemists of Schimmel & Co. have shown that the sole bearer of the natural odor of musk is a ketone which is present in the crude volatile oil of musk to the amount of 50 per cent., the volatile oil amounting to from 0.5 to 2.07 per cent. of the musk itself, and depending on the specimen operated on. To obtain the volatile oil, the musk is extracted by ether, and the extract distilled out with water vapor as long as any volatilizable matter passes into the aqueous distillate. The latter is then extracted with ether, which yields

Crude Musk Oil on evaporation. This, however, contains free fatty acids, and saponifiable constituents (fats), which impair the odor. To remove them, the crude oil is heated for a short time with alcoholic potash, and after then separating the oil and washing it with water, it is subjected to fractionation *in vacuo*. In this way 62 Gm. of the crude musk oil (the produce of 3.051 kilos of musk) eventually yielded 30 Gm. of a liquid having a constant boiling-point, which proved to be a ketone and has been named

Muskone. This has the pure musk odor, free from the disagreeable secondary odors of the musk secretion, and produces an aroma of hitherto unknown strength and fineness. It is a colorless, viscid oil, miscible with alcohol in all proportions; boiling-point 142° to 143° C. (2 Mm. pressure), 327° to 330° C. (752 Mm. pressure); sp. gr. at 15° C., 0.9268; $(a)_D - 10° 6'$; $(n)_D$ 25°, 1.47900. It produces a semicarbazone which crystallizes in fine, white prisms, which are absolutely odorless; but if a trace of this semicarbazone is heated with dilute sulphuric acid, muskone is at once split off and a powerful pure musk odor is developed. Analysis of the semicarbazone gave values which point to the composition $C_{15}H_{28}O$, or $C_{16}H_{30}O$ for muskone.—Schimmel's Rep., April–May, 1906, 94.

INORGANIC CHEMISTRY.

General Subjects.

Radium—Distribution in the Earth's Crust.—Professor Rutherford having given a calculation which suggests that there may be enough radium in the earth to account for the temperature gradient observed near the surface, and having based his calculations on the more or less imperfect data obtained at a time when the quantitative determination of minute amounts of radium were not so well understood, R. J. Strutt has undertaken and completed an extensive investigation of the amount of radium in various representative rocks, with results which are now communicated in a lengthy paper. The question is of great interest from a cosmical point of view, as is evident from the following summary of conclusions:

1. Radium can easily be detected in all igneous rocks. Granites, as a rule, contain most radium, basic rock the least.

2. The distribution of radium is uniform enough to enable a fair estimate to be made of the total quantity in each mile of depth of the crust.

3. The result indicates that the crust cannot be much more than 45 miles deep, for otherwise the outflow of heat would be greater than is observed to be the case. The interior must consist of some totally different material. This agrees entirely with Professor Milme's conclusions drawn from a study of the velocity of propagation of earthquake shocks through the interior.

4. The moon probably consists for the most part of rock, and if so, its internal temperature must be far greater than that of the earth. This explains the great development of volcanoes on the moon.

5. Iron meteorites contain little, if any, radium. Stony ones contain about as much as the terrestrial rocks which they resemble.—Chem. News, May 25 and June 1, 1906, 235 and 247.

Radium—Method of Therapeutic Application.—H. Lieber describes the following method of preparing radium for therapeutic application: The radium is dissolved in a suitable solvent, a suitable material is dipped into it, and then withdrawn with radium solution adhering to it; the solvent evaporates, leaving the material covered with a thin film of radium. The solvent used should soften the material used. Thus alcohol or amyl acetate is used for celluloid. The film is then protected by a coating of collodion. These films are exceedingly active, and compare favorably with radium itself when enclosed in a glass or aluminum tube. They can be sterilized by boiling without impairing their activity—Pharm. Journ., July 8, 1905, 33; from Journ. Soc. Chem. Ind., 1905, 24, 230.

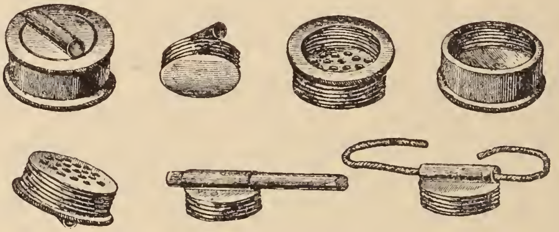
Radio-Activity—Practical Application.—In continuation of his researches on the practical application of radio-activity, W. Harrison Martindale (see Proceedings 1905, 697) gives an interesting account of the progress made during the past year in the study of radium and radio-active compounds. He describes the apparatus and method by which the delta rays emanated by polonium may be deviated from the neutralizing alpha rays and thus made available. Also a new radium electroscope, or clock, devised by Paschen, in which the leaves meet hourly, and so mark the progress of time. An apparatus for the administration of radium emanations is also described, and, as in the case of delta ray emanations from polonium and the radium electroscope, is accompanied by illustrations. Furthermore, the author points out the desirability of using the more plentiful compounds of uranium and thorium for the practical application of radio-active emanations, the high value of radium making its use almost prohibitive, and he describes a number of thorium salts (see under "Thorium"), which have been determined by Mr. Glew to possess the relative radio-activity shown by the following electroscopic figures:

	Scale Division.	Minutes.
Thorium lactate	3	3½
Thorium hydrate (moist)	3	5
Thorium sulphocarbolate	3	6
Thorium salicylate	3	7
Thorium oleate	3	15
Thorium coumarate	3	15
Thorium acid urate	3	16
Thorium cinnamate	3	19

The insoluble thorium compound, *e. g.*, the hydroxide, may be made into packs for local treatment, the rays being employed for nervous diseases.—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 429–440.

Radium Rays—Apparatus for Therapeutic Application.—The Swiss firm of C. F. Hausmann supplies several forms of apparatus designed for the convenient application of radium rays in the treatment of disease, which are shown in detail by the accompanying cuts. The apparatus shown by Fig. 48 is used for surface application. It consists of three essential parts which screw into each other, having when complete the appearance of the figure on the extreme left of the upper row in the drawing. The cut next to this is the carrier of the radio-active material, which is fastened on the flat surface shown. This serves either for direct contact applications, which may be effected by the aid of a string or glass rod, shown in the cuts of the lower row, or it may be screwed into the perforated cup, and the rays applied without direct contact. When not in use, this perforated portion of the apparatus is closed by screwing on the cover shown at the extreme right in the upper row. Another form of apparatus, which is intended for the application of radium rays to parts of the body not easily reached by the apparatus first described, is shown by Fig. 49. In this the radium-carrier consists of a small metal plate attached to a rod which slides in a handle, its position when in use being maintained by means of a set-screw. When not in use the radium-carrier is protected by a cap which slips over it when the rod has been completely dropped into the handle;

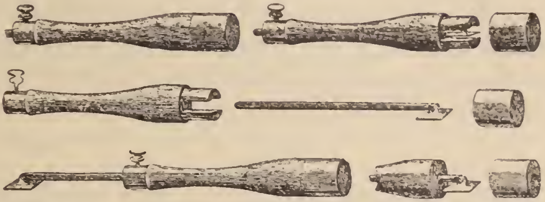
Fig. 48.



Apparatus for Application of Radium Rays.

these several parts and positions being well shown in the drawing.—Pharm. Ztg., l, No. 81 (1905), 859.

FIG. 49.



Apparatus for Application of Radium Rays.

Radio-Actinium—A New Product of Actinium.—The remarkable similarity in the nature of the radioactive decay of thorium and actinium has led to further investigation, which shows the similarity of the two bodies to be still greater. O. Hahn has succeeded in finding in actinium a new product which lies between actinium and actinium X, and which, from its analogy to thorium (which see) he proposes to call "radio-actinium." This substance emits a-rays, decays to the half value in about twenty days, and then yields "actinium X," which in turn decays to the half value in 10.2 days. In his recent communication on actinium and emanium, Markwald regards actinium as a decay product of emanium. Hahn considers it possible that the new product, radio-actinium, is identical with the decaying substance described by Markwald.—Chem. News., June 8, 1906, 259; from Bes. d. D. Chem. Ges., *39*, (1906), 1,605.

Actinium and Emanium—Question of Identity and Nomenclature.—The recent conclusion of Sackur and Hahn that, as first claimed by Debierne, actinium and emanium are identical bodies, leads W. Marckwald to review the history of these two bodies, and discusses the established facts that bear upon the question of their identity. From this it would seem that *actinium and emanium are not identical, but stand in a genetic relation.* Emanium, if we designate thus the substance following lanthanum, produces actinium, the strongly-emanating substance following thorium. The name emanium is not at all well chosen, for this substance gives no emanation whatever. It would have been better to name actinium from its power of emanation. Such unsuitable names, the author holds, would be avoided if all the chemists engaged in research in the province of radio-activity would refrain from naming newly discovered substances until their properties had been thoroughly investigated. If insufficiently characterized substances are provided with names, complication results instead of simplification.—Chem. News, Aug. 25, 1905, 92; from Ber. d. D. Chem. Ges., 1905, 2264.

Helium—Evolution from Actinium Solutions.—A. Debierne finds that solutions of pure actinium salts, free from radium, give off helium, in addition to hydrogen and oxygen, exactly as solutions of radium have been shown to do by Ramsey and Soddy, and the quantity of helium obtained therefrom is comparable with that obtained from radium for the same radio-activity. The author has observed, in the photographs of spectra of the gases given off by radioactive solutions, lines which do not appear to coincide with those of any known substances.—Pharm. Journ., Sept. 16, 1905, 387; from Compt. rend., 1905, *141*, 383.

OXYGEN.

Oxygen—A New Pharmaceutical Source.—At a meeting of the Kings County Pharmaceutical Society (March 18, 1906,) Dr. Richard von Foregger read an interesting paper on the pharmaceutical uses of the perborates and peroxides, with particular reference to their substitution for chlorine and other secondary oxidizing substances commonly employed. Sodium perborate, for example, is easily soluble in water and gives up its oxygen readily in the process. Other perborates and peroxides are not so soluble in water, but readily yield up their content of oxygen on being brought in contact with water. Strontium peroxide and the alkali perborates belong to the last-named class. Another group, the members of which do not dissolve in water and which do not give off their available oxygen at ordinary temperatures, but which are readily soluble in dilute acids, are the peroxides of magnesium, calcium, and zinc. After directing attention to the various uses to which the one or the other of these perborates and peroxides are particularly adapted—magnesium peroxide as a preservative in place of benzoic and salicylic acid, and for internal uses, zinc peroxide for external applications, etc.—the author calls attention to the utility of fused sodium peroxide, which is known commercially as

Oxone, and which serves admirably for the purpose of conveniently and expeditiously preparing pure oxygen for inhalation. This is obtained, similarly to acetylene gas, by simple contact of the oxone with water, and is practically absolutely pure, usually 99.4 per cent. a the outlet of the generator, and 99.7 per cent. after its passage through a wash-bottle. In the practical application a small portable generator, weighing between 4 and 5 pounds, is filled with water, and after exposing one or two cartridges of oxone, yields about 27 liters of gas per cartridge.—Amer. Drugg., March 26, 1906, 155–156.

Compressed Oxygen—Cause of Recent Explosions.—With the introduction of compressed oxygen for therapeutic and technical purposes, so-called "oxygen explosions" have found a permanent place in statistics of accidents. Two serious accidents of this kind, the one at Winterthur, Switzerland; the other reported from Genoa, Italy, furnish the text for a review of the cause of such explosions and the precautions necessary for their avoidance. Both of these explosions occurred when the attempt was made to withdraw some of the compressed gas by opening the manometer, and they are probably best explained by the investigation undertaken by Bozshard and Häuptli into the causes that were responsible for the explosion at Winterthur, and described in "Ztschr. f. angew. Chemie." (1905, No. 38). These have shown conclusively that the explosions were not due to faults in the metal from which the cylinder was constructed, or to the strength of the same, but to the faulty construction of the outflow attachment and to the impurities in compressed oxygen. The faulty construction consisted in the use of packing (rings) composed of cellulose and mineral matters, slightly lubricated with oil at the joints or the manometer to the cylinder. The impurity of the gas doubtless consisted of *oxyhydrogen*, for analysis of compressed oxygen of the same manufacture, taken from another cylinder, showed it to be a mixture of 77.57 vols. of oxygen, 20.10 vols. of hydrogen, and 2.33 vols. of nitrogen. The release of pressure on opening the valve caused its entry into the manometer with such force as to create sudden compression of the air within the latter; and the high temperature produced was sufficient to cause the ignition of the oil, and this in turn of the oxyhydrogen contaminating the oxygen, with the inevitable result of violent explosion.—Pharm. Ztg., l, No. 86 (1905), 910.

Ozone—Detection by Means of Silver.—H. Thiele calls attention to the necessity of great care in submitting an absolutely bright and *clean* silver surface to the action of ozonized oxygen in order to secure the characteristic blackening due to the presence of ozone. For this purpose the silver foil should be heated to redness in a Bunsen or spirit flame, so that a surface absolutely uncontaminated with organic matter shall be presented, such becoming immediately blackened by ozonized air. The simple contact with the fingers may prevent the reaction, even though the silver surface may appear perfectly clean and bright.—Pharm. Ztg., li, No. 11 (1906), 119; from Ztschr. f. öff. Chem., 1906, No. 1.

HYDROGEN.

Hydrogen Dioxide—Industrial Preparation, Test of Purity, etc.—O. Schmatolla observes that the industrial production of hydrogen dioxide depends to-day, as it did when it was discussed by Thenard (1818), on the use of barium dioxide, and that apparently the various patented and other processes that have been proposed from time to time since its extended use in the industries and medicine present no advantage over the original source of production. The principal improvements that have become public are confined to the production of barium dioxide of the greatest practicable degree of purity and strength, but the precise methods and process of producing from this product the commercial forms of hydrogen dioxide appear to be carefully guarded by the manufacturers. While some still adhere to the original method of decomposition by hydrochloric or sulphuric acid, others operate with carbon dioxide, or combinations of the two methods, but in all cases manage to keep the secret of purification inviolate. The

Solutions of Hydrogen Dioxide of commerce, as is known, are extremely variable in their composition, both as regards their strength and their purity. Leaving out of consideration the question of strength, that of impurities is of paramount importance. These consist of chlorine in form of hydrochloric acid and chlorides, of sulphuric and phosphoric acids, usually added as preservatives, and of aluminum, magnesium, silica, iron, baryta and lime, occasionally in considerable quantities. But among these chlorine must be considered the most undesirable impurity, since its presence to the amount of as little as 0.05 per cent., manifests itself by a distinct chlorine odor. Nevertheless, it is impracticable to insist upon absolute freedom from chlorine, such increasing the cost of the product beyond reason, while, on the other hand it is quite practicable to limit its presence to 0.01 per cent., a quantity which can safely be disregarded. To this end, the author proposes the following test: Dilute 10 Cc. of the sample with some water, add 25 drops of diluted sulphuric acid, about 0.05 to 0.1 Gm. of crystallized ferrous sulphate, and 5 Cc. $\frac{N}{10}$ silver nitrate V. S.; then titrate with $\frac{N}{10}$ sulphocyanide V. S., of which at least 4.6 Cc. should be required to produce a permanent red color. Furthermore, solution of hydrogen dioxide diluted with ten times its weight of water may give faint opalescence, but no flocculent precipitate, on addition of silver nitrate T. S. The author gives simplified tests for the other acids and the inorganic impurities, which however differ in no essentials from those commonly directed.—Pharm. Ztg., l, No. 61 (1905), 641.

Hydrogen Peroxide—Superiority of the Permanganate Method of Estimation over the method of the B. P.—J. A. Hughes describes a method for the convenient estimation of hydrogen peroxide, which is essentially that of the U. S. P. depending on titration with permanganate solution, and which he finds preferable to the B. P. method of estimation by the nitrometer.—Chem. and Drug, Febr. 3, 1906, 211.

Hydrogen and Chlorine—Cause of Inactive Period in the Explosion.—D. L. Chapman and C. H. Burgess suggest that the failure of a mixture of hydrogen and chlorine to explode immediately on being exposed to sunlight is not due, as is generally supposed, to the preliminary formation of an unstable compound, but to the presence in the gas, or in the aqueous solution in contact with it, of substances which react with chlorine. Water and many aqueous solutions render chlorine inactive in this manner; if these are boiled with chlorine, or are exposed to light when in contact with chlorine, they lose their capacity of rendering chlorine inactive. A minute trace of ammonia is capable of retarding the explosion of a mixture of hydrogen and oxygen for a very long time; sulphur dioxide acts in a similar manner. An active mixture of dry hydrogen and chlorine can be kept in the dark for an indefinite time without losing its capacity of exploding at once under the action of sunlight.—Pharm. Journ., July 29, 1905, 116; from Proc. Roy. Soc., 1905, 400.

HALOGENS.

Calx Chlorinata — Practical Observations Concerning Commercial Quality.—F. H. Alcock observes that calx chlorinata appears to have fallen upon evil times. Many samples in packets which have been purchased both for laboratory and domestic use have come far short of what such a thing should be. Thirty years ago it came to the retailer in 7 and 14 lb. stone jars fitted with good cork bungs, and the "putting up" of ½ lb. and 1 lb. in packets as required by the customer—which operation was relegated to the "last comer"—does not now recall anything pleasant, on account of the strong odor and disagreeable nature. Modern methods have called for packets made up and ready for sale, and probably too much confidence is put in these for the preservation of its goodness, for in spite of the paraffinized and other methods of rendering paper impervious to air, moisture and carbonic acid from without, and chlorine and other chlorinated gases from within, the following figures representing the percentage of available chlorine will show their non-success:

1.	22.3
2.	25.7
3.	18.0
4.	26.1
5.	30.1
6.	15.9

It may be these have been in stock too long, or they have not been kept in suitable places, or are not intended to represent the B. P. quality. —Pharm. Journ., Oct. 14, 1905, 520.

Hydrochloric Acid—Removal of Arsenic by Means of Vanadous Salts.—A method has been patented for the removal of arsenic and purification of hydrochloric acid, which depends on the property of vanadous salts to rapidly reduce arsenous chloride to metallic arsenic, which separates from the solution in the form of minute particles or as a flocculent precipitate which can easily be filtered off. In this reaction the blue color of the V_2O_2 changes to the green color of V_2O_3. On an industrial scale the gaseous HCl is conducted through strong solution of vanadous chloride, which retains the arsenic and is itself converted into vanadic chloride, from which vanadous chloride can be regenerated.—Apoth. Ztg., xx, No. 92 (1905), 933.

Sodium Chlorate—Detection and Estimation in Sodium Nitrate.—L. Grimbert observes that the presence of small quantities of chlorate in sodium nitrate is not of infrequent occurrence, although generally ignored by medical works of reference. Its presence (or absence) however, becomes a matter of importance in certain analytical operations, and is easily recognized by adding a drop of aniline to a few cubic centimeters of a solution of the suspected sodium nitrate, shaking the mixture well, and then carefully introducing a substratum of concentrated sulphuric acid. In the presence of chlorate a blue intermediate zone (Vitali's reaction) is developed. The chlorate may be estimated quantitively by incinerating a sample of the nitrate with a small quantity of cane sugar, which reduces the chlorate to chloride. The latter may then be estimated volumetrically or gravimetrically and the amount of chlorate calculated from the figures ascertained, providing, of course, that the original sample had been previously found free of chlorine.—Pharm. Ztg., li, No. 18 (1906), 202; from Journ. de Pharm. et Chim., 1906, xxiii, No. 3.

Iodine—Cause of Back Reaction in Titrations.—It is often noticed when making quantitative determinations involving the liberation of iodine from potassium iodide and the titration of the liberated iodine by sodium thiosulphate, using starch as indicator, that the end-point of the reaction is uncertain owing to the reappearance of the blue color on standing a short time. John Hughes Davies and Edgar Philip Perman have inquired into the cause, and find that the reappearance of the blue color is due to the comparative slowness of the liberation of iodine from potassium iodide, in dilute solutions. Sufficient increase of concentration of the iodide solution makes the reaction very nearly instantaneous, and thus avoids any possible "back reaction." The latter has been found most marked in those cases in which iodine is liberated by copper sulphate or potassium dichromate. It was found that suitable quantities of potassium iodide were 1 Gm. in 10 Cc. of water for 25 Cc. $\frac{N}{10}$ $K_2Cr_2O_7$ solution, or 2 Gm. in 22 Cc. of water for 1 Gm. $CuSO_4.5H_2O$ in 50 Cc. of water.—Chem. News, May 18, 1906, 225.

Hydriodic Acid—Expeditious Method of Preparation.—F. Bodroux recommends the following expeditious method of preparing hydriodic acid: To 60 Gm. of barium peroxide suspended in 100 Gm. of water, 50 Gm. of iodine are added in small portions at a time, and the colorless solution of barium iodide, obtained according to the equation $BaO_2 + I_2 = BaI_2 + O_2$, is filtered off from the excess of BaO_2, the latter being washed with a little water. Then 50 Gm. of iodine are dissolved in the filtrate and washings and the solution is treated with gaseous sulphurous acid until decolorized, barium sulphate and hydrogen iodide being formed, according to the equation $BaI_2 + I_2 + SO_2 + 2H_2O = BaSO_4 + 4HI$. The solution of hydriodic acid is separated from the precipitated $BaSO_4$ by filtration and concentrated by distillation. In this way 140 Gm. of hydriodic acid boiling at 127° and having the sp. gr. 1.67 is obtained within 3 hours from the beginning of the operation.—Pharm. Ztg., li, No. 29 (1906), 333; from Chem. Centralbl., 1906, i, No. 9.

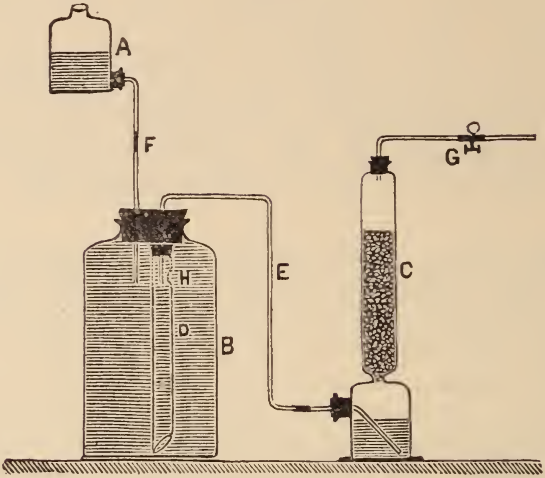
Bromine Fluoride—A New Compound.—Paul Lebeau has isolated a new compound, BrF_3, the existence of which had been recognized by Moissan, by the action of fluorine on bromine, in a specially contrived apparatus of glass and platinum. It is a colorles liquid, fuming in the air and giving off irritating vapors, yielding a solid, fusible at – 4°, consisting of a mass of beautiful colorless prisms. It behaves chemically like fluorine. —Chem. News, Jan. 19, 1906, 33; from Compt. rend., cxli, No. 24 (1905).

Hydrofluoric Acid—Method and Precaution in Etching on Glass.—Nicholas Knight observes that in practical experiment of etching on glass with fluor-spar and sulphuric acid, it is desirable to have both the surfaces of the glass coated with a thin layer of wax or paraffin; otherwise the upper surface becomes etched by the acid fumes, and the experiment is thereby marred. To obtain the desired effect, the writer for a number of years has kept an ordinary copper water-bath, 6 inches in diameter, nearly filled with paraffin. This is carefully heated to avoid burning until it is all melted. The glass object upon which the etching is to be made is immersed in this liquid and quickly withdrawn, when both sides and the ends as well are covered uniformly with a thin layer. After the etching is accomplished, the paraffin is easily removed by immersing the glass in warm water, not sufficiently hot to break it. The usual way of spreading the paraffin on one side of the glass by warming it with a small flame underneath often fractures the glass, but by the method described in the foregoing the etching is so easily and satisfactorily made that the students are eager to repeat the experiment, and they etch beautiful monograms and designs on various objects.—Chem. News, Dec. 29, 1905, 295.

SULPHUR.

Hydrogen Sulphide—New Form of Generator.—A. W. Gregory has found the apparatus shown by Fig. 50 to be very efficient for large and continuous supplies of hydrogen sulphide. From the tubulated bottle (*A*), containing dilute hydrochloric acid, a delivery tube (*F*) leads into a wide-mouth bottle (*B*), filled with dilute hydrochloric acid, and carrying a wide glass tube (*D*) connected with a tube (*E*) leading into a glass tower (*C*) of conventional construction—tube (*D*) having a wide opening at (*H*), just above the termination of the tube *E*. The tower *C* being filled with iron sulphide, on opening the pinch-cock (*G*), acid is admitted from the upper layer in *B*, hydrogen sulphide being at once generated. When the pinch-cock is again closed, the partially spent and denser acid returns to *B*, and is conducted to the bottom of the reservoir by means of the tube *D*, while on again opening the cock fresh acid, supplied automatically from *A*, again goes to the tower through the opening at *H.*—Chem. News, Jan. 19, 1906, 27.,

FIG. 50.



New Form of Generator.

Sodium Sulphide—Use in Combination with Formaldehyde as a Substitute for Hydrogen Sulphide.—Dr. J. Ducommun finds that sodium sulphide in conjunction with formaldehyde is a convenient substitute for ammonium sulphide and hydrogen sulphide in the examination of chemical preparations for the heavy metals. The acidulated solution of the preparation is mixed with 2 to 5 Cc. of chemically pure formaldehyde solution, followed by a moderately concentrated solution of pure sodium sulphide. In the presence of a metal of the arsenic-zinc group a precipitate of sulphide of the metal is at once produced; then, on addition of alkali to the filtrate, the metals of the iron group, if present, are precipitated. The presence of formaldehyde prevents the deceptive preliminary precipitation of sulphur.—Schw. Wchschr. f. Chem. u. Phar., xliii, No. 46 (1905), 635.

Sodium Hydrosulphite—Reaction with Sodium Thiosulphate.—A. Binz and W. Sondag have studied the course of reaction by which sodium sulphide is formed when sodium hydrosulphite and sodium thiosulphate are caused to act upon each other. Preliminarily the different forms in which the sulphur was present were determined quantitatively by the following experiments: A weighed quantity of the powdered hydrosulphite was titrated with standard potassium ferricyanide in a current of carbon dioxide. This titration proved the presence of 80.2 per cent. $Na_2S_2O_4$. Then from another weighed quantity the sulphur dioxide was removed by boiling with hydrochloric acid and carbon dioxide. The liquid was filtered from sulphur, and in the filtrate the sulphate sulphur was determined by precipitation as barium sulphate; this amounted to 0.93 per cent. A weighed quantity of the hydrosulphite was converted into tetrathionate, which, when boiled with hydrochloric acid and pure aluminum foil in a current of carbon dioxide, gave an amount of hydrogen sulphide corresponding to 0.67 per cent. thiosulphate sulphur. The sulphite sulphur amounted to 4.60 per cent., and was determined by shaking the substance with sodium hydroxide solution (1.7 per cent.) in air, decomposing the thiosulphate with mercuric chloride, and driving off the sulphurous acid into $\frac{N}{10}$ iodine solution. A portion of the hydrosulphite powder was then warmed to 57–62° for five hours in absence of air with sodium thiosulphate and caustic soda. The amounts of sulphur in the form of hydrosulphite, sulphide, sulphite, thiosulphate, and sulphate were then determined, and these were found to agree with the following equation, which represents the reaction between hydrosulphite and thiosulphate:

$$Na_2S_2O_4 + Na_2S_2O_3 + 4NaOH = 3Na_2SO_3 + Na_2S + 2H_2O.$$

—Chem. News, Dec. 29, 1905, 303; from Ber. d. D. Chem. Ges., 1905, 3834.

SELENIUM.

Selenium—Allotropic Forms.—Robert Marc shows by experiments, conducted with carefully purified selenium, that two different forms of metallic conducting selenium exist. The gray crystalline form, obtained by heating amorphous selenium, is labile. Denoting this form by A, the author has shown that A goes over into the second form B practically at all temperatures, and with measurable velocity above 170°. This change is accompanied by development of heat. Modification A is a very bad conductor of the electric current at the temperature of the room. On warming, its conductivity rapidly increases, and reaches about twenty times its original value at 170°, and on converting form A into form B the conductivity also increases, being ten times the conductivity of A at 170°; this increase, however, takes place very slowly. It was to be expected that form B would be the stable form of selenium at all temperatures, but this was not the case. If it was rapidly cooled, the conductivity increased; and at the temperature of the room the conductivity of form B is 1,000 to 2,000 times greater than that of A. However, when allowed to stand at the temperature of the room the conductivity steadily decreased. It was further found that in the interval 217° to 160° there was equilibrium between the two modifications of selenium. Amorphous selenium appears distinctly red in thin layers, form A is metallic-gray with a faint reddish glimmer, and form B is blue-gray. Amorphous selenium is exceedingly brittle, form A less so, but may easily be powdered, while B is ductile. Neither A nor B is soluble in pure carbon disulphide at the temperature of the room, and the conflicting evidence of other workers upon this and other points is to be ascribed to the impurity of their preparations. Pure selenium shows a very great power of attacking metals, and differs in many ways from the impure element.—Chem. News, March 23, 1906, 141; from Ber. d. D. Chem. Ges., *39* (1906), No. 3.

NITROGEN.

Nitrogen—Atomic Weight.—Philippe A. Guye found that the determination of the atomic weight of nitrogen gave as the mean of mean experiments by physico-chemical methods 14.008, and by chemical methods 14.010. The International Atomic Weight Committee has retained the number 14.04, which the author believes to be erroneous for the following reasons: 1. It was determined by the old methods, which rested on very indirect relations between the atomic weight of nitrogen and that of silver. These methods were not exact enough to guarantee the accuracy of the second figure in the decimal. 2. The new value N = 14.01 results from twelve determinations of the direct ratio to oxygen, and this element is the actual basis of all other atomic weights. Six of these determinations were performed by physico-chemical and six by chemical methods. 3. Chemists have always been in the habit of taking N = 14 for rough calculations, and this differs from the true value by only $\frac{1}{1400}$, and, moreover, agrees perfectly with the accurately determined densities of the gases nitrogen, nitrious oxide, nitric oxide, and ammonia, and with exact analyses of the gases nitrous oxide and nitric oxide.—Chem. News, June 1, 1906, 257; from Ber. d. D. Chem. Ges., *39*. (1906), No. 6.

Liquid Nitrogen—Properties.—H. Erdmann describes liquid nitrogen as a very mobile colorless liquid, differing markedly in its physical properties from liquid air: this latter contains much oxygen, and its specific gravity is so high that a piece of ice thrown into it always floats, while in liquid nitrogen both ice and absolute alcohol sink as soon as the temperature has adjusted itself, and the violent evolution of gas, which first of all forces the frozen alcohol and ice to the surface, has ceased. This phenomenon is in better agreement with the specific gravity given by Ramsay and Drugman (0.7914 at the boiling-point) than with that determined by Dewar (0.850). If liquid air is poured over a bulb filled with dry oxygen at ordinary pressures, and then closed, no visible change occurs in the interior, but if liquid nitrogen is used the oxygen at once condenses into bluish drops. Thus, the temperature produced by the evaporation of liquid nitrogen is lower than that produced by liquid air, and for this reason it is a very good cooling agent. It is a good solvent for liquids boiling at a low temperature. The miscibility of liquid nitrogen with liquid ozone is very striking. A 15 to 20 per cent. solution of ozone in liquid oxygen remains perfectly clear after the addition of many times its volume of liquid nitrogen, but if ozonized oxygen is led directly into liquid air, phenomena occur from which it might appear that ozone is salted out from its solution in oxygen by means of liquid nitrogen. Solutions of ozone in liquid nitrogen might be used to determine the molecular weight of ozone in solutions. The author has determined by the surface-tension method the molecular weight of liquid nitrogen, but will not publish the results until he has repeated the experiments with chemically pure nitrogen of constant melting-point. Liquid nitrogen appears to be as indifferent as the gaseous element, extinguishing a burning chip and magnesium wire, but if poured over burning metallic calcium, calcium nitride is formed; this yields ammonia with water.—Chem. Nems, June 1, 1906, 256; from Ber. d. D. Chem. Ges., *39* (1906), No. 6.

Nitrous Acid—Estimation in the Presence of Nitric Acid.—Jacob Meisenheimer and Friedrich Heim have devised a method by which nitrous acid can be determined conveniently, quickly and accurately, and which is well suited for the estimation of nitric and nitrous acids in presence of one another. The separation of the two acids rests upon the already known reactions represented by the following equations:

$$(1)\ HNO_2 + HI = NO + I + H_2O,$$
$$(2)\ HNO_3 + 3FeCl_2 + 3HCl = NO + 3FeCl_3 + 2H_2O.$$

The faintly alkaline solution of the substance (0.1 to 0.2 Gm. nitrite) is placed in a round flask closed by a three-holed rubber cork. Through the holes of the cork pass: (1) a tube bent twice at an acute angle, the free end being narrowed to a point which dips into a trough filled with 12 per cent. caustic soda; (2) a tube from a Kipps' apparatus generating carbon dioxide which is washed with potassium carbonate solution. This tube reaches nearly to the bottom of the round flask; (3) a separating funnel, which before the experiment is filled up to the cock with pure water. All the air is first expelled by passing a current of carbon dioxide for ten minutes, after which over the end of the bent tube a eudiometer tube filled with 12 per cent. caustic soda is placed. Then 10 to 15 Cc. of a 5 per cent. potassium iodide solution are introduced into the flask through the separating funnel, and an equal amount of dilute hydrochloric acid. The nitric oxide begins to be evolved at once, and the reaction is hastened first by gentle warming and then by heating until a state of incipient ebullition is reached, a current of carbon dioxide being simultaneously passed through the apparatus so that the last traces of nitric oxide may be expelled. As soon as the volume of gas obtained no longer increases, the eudiometer is removed, well shaken, and transferred to a high cylinder with water, and left for ten minutes. If the nitric acid is to be determined in the residue, a fresh eudiometer filled with caustic soda is brought over the bent tube, and by means of the separating funnel 10 to 20 Cc. of a concentrated strongly acid solution of ferrous chloride in hydrochloric acid is introduced, and the experiment is then concluded as in Spiegel's modification of Schulze and Tiemann's method. The advantages of this method are:

(1) it takes very little time, at the most an hour and a-half from beginning to end, if the apparatus is prepared beforehand; (2) the determination of both acids is performed on the same quantity of substance; and (3) both acids are determined directly, thus avoiding errors of indirect methods.—Chem. News, Dec. 29, 1905, 304; from Ber. d. D. Chem. Ges., 1905, 3834.

Nitrous Acid—Determination.—F. Raschig has investigated the determination of nitrous acid, using the method described by Meisenheimer and Heim (see above). Instead of measuring the nitric oxide, however, he prefers to determine the iodine separated by titration with thiosulphate, which is naturally much quicker than measuring the gas. This method is useful only when the far more convenient permanganate oxidation method cannot be employed. Lunge added the nitrite solution very slowly to a known quantity of acid, $\frac{N}{2}$ permanganate solution, warmed to 40° C. This method has the disadvantage that the errors in the determination are the greater the stronger the nitrite is, and, moreover, the decoloration of the permanganate proceeds so slowly towards the end that it is very easy to add too much nitrite, and this error cannot be rectified by a back titration. Moreover, sometimes manganese peroxide separates and cannot be removed by fresh additions of nitrous solution. All these drawbacks are avoided by the author's method. He uses an excess of about 20 per cent. of permanganate. If necessary acid is added (this of course superfluous in the case of nitroso acids), and after two minutes all nitrous acid is oxidized to nitric. Then the excess of permanganate is determined, the best process being that of Vollhard, in which potassium iodide is added, and the iodine set free is titrated with thiosulphate.—Chem. News. Jan. 19, 1906, 31; from Ber. d. D. Chem. Ges., 1905, No. 16.

PHOSPHORUS.

Phosphorus Pentasulphide—A New Variety.—If white phosphorus, sulphur and a little iodine are dissolved in carbon disulphide, the solution filtered and heated for twelve hours to 120°–130° in a steel tube, crystals of phosphorus pentasulphide are obtained, which may be purified from traces of sulphur, iodine and iron by Hoffmann and Stock's method. Stock and v. Schönthan noticed that the greater part of the pentasulphide thus prepared melts at 255°, while the melting-point of ordinary phosphorus pentasulphide is 275°–276°. Hence they concluded that a second modification of P_2S_5 exists, probably of lower molecular weight than the ordinary variety. Stock and Kurt Thiel have now confirmed this assumption, and find that of the two modifications the new variety is more soluble in carbon disulphide than the ordinary modification. They have investigated the molecular weight of the ordinary sulphide by determining the raising of the boiling-point in carbon disulphide solution, and have found that the formula in boiling CS_2 is P_4S_{10}. Similar experiments with the new variety show that it contains a substance which has a smaller molecular weight than P_4S_{10}, but on the basis of the molecular weight determinations, and also from the fact that the new variety does not possess a sharp melting-point, it seems probable that it is not a single substance, but that it cannot be further decomposed by fractional crystallization from carbon disulphide.—Chem. News, Oct. 20, 1905, 191; from Ber. d. D. Chem. Ges., 1905, No. 12.

Phosphoric Acid—Estimation in Foods.—Up to quite recently the determination of phosphorus in foods was effected by testing with the ash obtained by incineration. It has been found, however, by this method there is lways a considerable loss of phosphorus, which sometimes amounts to 31 per cent. of the estimated amount. Hence it has been proposed by Garola to use Kjeldahl's method for the destruction of the organic matter, and E. Fleurent finds that this method leads to exact results, provided it is followed with the greatest care in all its details. To avoid various drawbacks, which are pointed out, Mr. Fleurent has for some years used a method based on the destruction of the organic matter by the successive use of nitric and sulphuric acids, which enables him to work on 10 or 20 Gm. of material, according to its richness in phosphorus, and thus in every case to weigh a proportion of magnesium pyrophosphate always sufficient to insure the correctness of the analytical calculations. The details of the method are given.—Chem. News, July 14, 1905, 16; from Bull. Soc. Chim. (3), xxxiii, No. 1.

Phosphates—Determination in Foods.—E. Fleurent describes the following method adapted to the determination of phosphates in foods: 10 or 20 Gm. of the dried and powdered foodstuff is carefully oxidized with 50 or 100 Cc. of fuming nitric acid, the resulting liquid being evaporated to dryness. The residue is heated with 15 to 20 Cc. of fuming sulphuric acid (8 per cent. of SO_3) and one drop of mercury, proceeding in the manner described by Kjeldahl; dilute carefully; neutralize with ammonia, keeping the mixture cool. Transfer to a beaker and determine the phosphates present with magnesia mixture in the ordinary way.—Pharm. Journ., Ang. 5, 1905, 195; from Bull. Soc. Chim. (3), *33*, No. 1, through Chem. News, 1905, *92*, 16.

Ammonium Phosphate—Technical Uses.—H. F. Baker calls attention to ammonium phosphate in order to illustrate how it is possible that a product, which originally had been developed for its therapeutic value and had been cast aside as useless, has in time been taken up by another branch of the profession and found to be of considerable value. Ammonium phosphate was originally proposed as a remedy for gout, rheumatism, and diabetes, but extensive experiments proved that it had no advantage over the carbonates of the alkalies and a decided disadvantage from the fact that it favored the formation of ammoniaco-magnesian calculi, wherefore its therapeutic use never became popular and has been completely abandoned. While, therefore, ammonium phosphate has proved a failure from a therapeutic standpoint, it has recently assumed great importance as a chemical compound because of the discovery of its utility as an element in making wood and fabrics fireproof. The subject of making inflammable material fireproof has attracted the attention of the chemists since early in the eighteenth century, and numerous methods and substances have been proposed by noted chemists, among them Gay-Lussac, Fuchs, Lochtlin and others. The early experiments clearly demonstrated that the most efficient salts for this purpose were those of alumina and ammonia, and it is therefore interesting to note that at present aluminum sulphate, or a mixture of ammonium phosphate and ammonium sulphate are generally used for this purpose. Another important use for ammonium phosphate which has recently been discovered is for the preliminary treatment of cotton, yarns and tissues of vegetable fibres which are to be dyed, and also a mordant in the dyeing of silk, for which purpose great superiority over those commonly employed is prognosticated. It has also been found superior to calcium chloride and magnesium chloride, until now the recognized finishing agents for cloths, muslins, linens, etc. For these purposes the monoammonium phosphate, $(NH_4)H_2PO_4$, is the salt used, and this is manufactured by practically the same process as that described originally in the B. P.—the only changes made being in the substitution of crude materials for the pure, and mechanical methods to produce the largest quantity at the lowest cost.—Proc. Md. Pharm. Assoc., 1905, 113–115.

BORON.

Boric Acid—Reaction with Turmeric and Other Color Reagents.—Dr. G. Fendler has made an exhaustive study of the official color tests described for the identification of boric acid or of its salts in preserved meats, and particularly of the color reaction with turmeric. In this test the meat is incinerated with sodium carbonate, the ash dissolved in hydrochloric acid, a strip of turmeric paper moistened with the acid solution obtained and dried on a watch-glass at 100° C. The production of a red color, changing to blue on addition of a drop of sodium carbonate solution, establishes the presence of boric acid or a borate in the meat under examination. So much depends, however, on individual judgment in carrying out this test, on the selection of the reagent paper, the degree of acidity of the solution, and the manipulation, that erroneous conclusions become quite possible, either negatively or positively, so that on the one hand, by the use of insufficiency of acid or of inferior test-paper, the reaction may be obscured, or, on the other, the use of a highly sensitive paper may reveal the presence of boric acid in quantities attributable to impurity in the salt used for preserving the meat. On consulting the literature the author finds that there is not alone the greatest diversity of opinion concerning the method of testing with turmeric, the degree of acidity required, and the manipulation, but also in the quality of the paper supplied or the directions for its preparation. While, therefore, the observations of color reactions by individual experimenters are doubtless correct, they necessarily apply only to the conditions of the experiment, and must vary according to the degree of acidity, the quantity of boric acid, the character and quality of the turmeric paper, the nature of the alkali used to produce the change of color, and the condition of the test-paper—dryness or moisture—when the observation of the color reaction is made. After a very extensive series of experiments (the results of which are shown in comprehensive tables) with turmeric papers obtained from different commercial sources, and particularly with such prepared by the author with tinctures obtained direct from turmeric, from such previously exhausted with water, and from pure curcumin, using both writing-paper (as prescribed by the G. P.) and filter-paper, the following method for preparing a most efficient

Tumeric Paper is prepared: Strips of filter-paper are saturated with a solution of 0.05 Gm. of curcumin in 100 Cc. of 99 per cent. alcohol and dried in a dark place suspended on string. When dry (after one-half to one hour), the paper is enclosed in a glass-stoppered vial and preserved carefully protected from light. The celerity with which the paper is prepared in this way obviates the necessity of keeping large quantities in stock and assures its reliability. In use a strip of the paper is dipped to half its length into the solution to be tested, placed on a watch glass and dried in a water-oven. When dry it is removed, and the color reaction observed after two minutes' exposure. A solution containing 0.005 per cent. of boric acid and 10 per cent. of hydrochloric acid produces a handsome rose-red color, changing to intense violet-blue on addition of a drop of ammonia water, or of solution of Na_2CO_3, or light-green with solution NaOH, preference being given to ammonia. Solutions containing large quantities of boric acid give a carmine-red color turning deep-blue with ammonia. The presence of a large percentage of HCl is an advantage, the distinctness of the reaction being reduced so as to be scarcely perceptible with solutions containing only from 1 to 2 per cent. of HCl, while with 10 per cent. HCl even as small a quantity as 0.001 per cent. of boric acid will produce a distinct reaction. It is, however, not advisable to increase the acidity beyond 10 per cent. The presence of sodium chloride and other salts does not interfere with the reaction. The

Flame Test for Boric Acid, required under the statute in addition to the turmeric test, has also been the subject of experiment by the author. This consists in dissolving the ash obtained by incinerating the meat or other food with sodium carbonate in water acidulated with HCl, transferring it to a Woulfs' flask, adding methyl alcohol, and passing a current of hydrogen through the flask, which, in the presence of boric acid, burns with a green flame. Even when modifying this test, originally proposed by Rosenbladt, by substituting illuminating gas for hydrogen and in other respects making it more available and sensitive as suggested by V. Spindler, the flame test is regarded by the author as being of questionable utility in connection with the far more sensitive curcumin test. Indeed, he considers the latter so delicate, that a positive reaction does not permit the conclusion that boric acid has been purposely added.—Apoth. Ztg., xx, Nos. 75, 76 and 77 (1905), 757, 765 and 777.

Boric Acid—New and Convenient Reaction.—A new reaction of boric acid, which permits its very convenient and reliable detection, is found by V. Castellana in its behavior with potassium ethyl sulphate. If the substance under examination is heated in a test-tube with an excess of potassium ethyl sulphate and the vapor evolved is ignited, the flame produced exhibits an intensely green margin in the presence of boric acid. The reaction is stated to be quite sensitive.—Pharm. Ztg., li, No. 36 (1906), 403; from Ztschr. f. angew. Chem., 1906, No. 17.

Borax—New Reaction.—C. Reichard finds that if borax is intimately triturated with small quantities of nitroso-napthol, and spread by means of a moistened glass rod on a white surface, an intense green color is produced, which is quite stable.—Pharm. Ztg., li, No. 29 (1906), 298.

Calcium Boro-Bromides—A New Class of Compounds.—L. Ouvrard finds that if 1 mol. of boric acid anhydride and 2 mol. of calcium bromide are melted together, allowed to cool slowly, and then are extracted with cold water, a new compound, having the composition $5B_2O_3.3CaO.CaBr_2$, is obtained in form of fine needles or prisms. These are scarcely soluble in hot water or diluted acetic acid, but dissolve readily in dilute or concentrated mineral acids. If an additional molecule of CaO is used, a compound having the formula $3B_2O_3.3CaO.CaBr_2$ is obtained. This crystallizes in transparent octahedrons which, although insoluble in water, are readily soluble in dilute acetic acid.—Pharm. Ztg., li, No. 46 (1906), 512; from L'Union Pharm. (1906), No. 5.

Sodium Perborate—Use and Value for Toilet Preparations.—Richard von Foregger discusses the use and value of sodium perborate, $NaBO_2+4H_2O$, for preparing various small preparations, for which purpose it possesses the advantage of possessing greater stability over the "peroxides," while producing in contact with water hydrogen peroxide, or, in contact with moisture or with skin secretions, nascent oxygen with equal facility. It possesses the further advantage of being of mild alkaline reaction and neutralizing acids; and if used in a talcum powder, or similar toilet preparation, it proves of threefold benefit: (1) Its oxygen disinfects and destroys putrefaction; (2) the alkaline base neutralizes the acidity of perspiration; (3) it is a perfect deodorant. In fact, it possesses all the properties, as an oxidizing agent, of potassium permanganate without the toxic, irritating and color effects. The author gives formulas for preparing a number of toilet preparations, such as "Talcum Powder," "Nail Powder," "Foot Powder," "Nail Bleach," and "Hand Cleaner," which are discussed under "Pharmacy."—Amer. Drugg., Feb. 12, 1906, 61.

CARBON.

Diamonds—Distribution in South Africa—Introducing the subject of a highly interesting lecture on "diamonds," delivered before the British Association at Kimberley, Sir William Crookes mentions that he has studied diamonds scientifically for thirty years, and that of the Kimberley mines he can speak with the freshness of personal experience. In 1896 he spent nearly a month at Kimberley, during which he was given opportunities to pursue his inquiries by the managers of the De Beers Consolidated and other mines. He had free access to all the workings, above and below ground, examined at leisure their stock and took extracts from their books. He had exceptional opportunities for studying the peculiar geological formation, and of noting facts connected with the birth of the precious stone, which was so well described in a lecture "On Diamonds," delivered by Professor Maskelyne more than forty years ago, "as a substance which transcends all others in certain properties to which it is indebted for its usefulness in the arts and its beauty as an ornament. Thus, on the one hand, it is the hardest substance found in nature or fashioned by art. Its reflecting power and refractory energy, on the other hand, exceed those of all other colorless bodies, while it yields to none in the perfection of its pellucidity. "Yet," he was constrained to add, "the formation of the diamond is an unsolved problem." The most famous diamond mines are Kimberley, De Beers, Dutoitspan, Bultfontein, and Wesselton. Kimberley is practically the center of the present diamond-producing area. The mines are situated in latitude 28°43′ South, and longitude 24°46′ East. There are also river washings in the neighborhood of the Vaal river, where the work is conducted in a somewhat primitive fashion. The diamonds from the latter source are of all kinds, as if contributed by every mine in the neighborhood. They are much rolled and etched, and contain a fair proportion of stones of good quality, as if only the better and larger diamonds had survived the ordeal of knocking about. Besides these mines, there are in Orange River Colony—about 60 miles from the Kimberley diamond region—two others of some importance known as Jagersfontein and Koffyfontein, whilst about 20 miles W. N. W. of Pretoria is situated the New Premier mine, now famous as the home of the wonderful "Culliman" diamond. In this noteworthy and in some respects remarkable address, Sir William Crooks pictures the underground wonders of the Kimberley mines, as observed by him during his two visits; the strenuous toil of the men who bring to the surface the buried treasures and gives some idea of the skill and ingenuity with which their labors are controlled. He sketches the fiery origin of the diamond, of the glowing, molten subterranean furnaces where they first take shape; and he shows that a diamond is the outcome of a series of titanic convulsions, and that these precious gems undergo cycles of strange and potent vicissitudes before they can blaze on a ring or a tiara.—Chem. News, Sept. 23 and 29, and Oct. 6, 1905, 135, 147 and 159.

Carbon Suboxide, C_3O_2—A New Compound.—Otto Diels and Bertram Wolf have succeeded in producing a new compound of carbon and oxygen, having the composition C_3O_2, which they have named carbon suboxide, by the action of the vapors of malonic acid ester on a large excess of phosphorus pentoxide, carefully distributed on glass-wool, at a temperature of about 800° C. in a vacuum of 12 Mm. Any undecomposed malonic acid ester is condensed in a well-cooled receiver, the proper products of the reaction, ethylene and carbon suboxide, being collected in a second receiver, refrigerated with liquid air, and protected from moisture by means of phosphorus pentoxide. The ethylene is separated from the carbon suboxide by spontaneous evaporation at the room temperature, and the purification of the latter is accomplished by rectification at the temperature of the hand and collection of the distillate in a receiver cooled to — 60° to — 70° C. The carbon suboxide so obtained forms a colorless, refractive, extremely mobile liquid, having a powerful odor, reminding of acrolein and mustard oil. Eyes, nose and respiratory organs are affected by it, the vapor being capable of producing suffocation. It boils at + 7° C. under a pressure of 761 Mm. In its chemical relations and all of its reactions it may be regarded as the anhydride of malonic acid, its constitution being explained by the structural formulas of the two substances, viz.: $COOH - CH_2 - COOH$ (malonic acid); $CO = C = CO$ (malonic acid anhydride). With water it forms malonic acid; with aniline, malonanilide; with ammonia, malonamide. At 15° C. it is decomposed in the course of a day or two with red to black colored substances.—Pharm. Ztg., li, No. 33 (1906), 374; from Ber. d. D. Chem. Ges., 1906, 689.

CYANOGEN COMPOUNDS.

Hydrocyanic Acid.—Occurrence of glucosides yielding it, in the leaves of *Thalictrum aquilegifolium* and in *Currant Leaves*, which see under "Materia Medica."

Hydrocyanic Acid—Determination in Bitter Almond Press-cake.—Ph. Röder recommends the following method for determining the hydrocyanic acid in bitter almond press cake; 10 Gm. of the cake and 250 Cc. of water at 40° C., are placed in a retort attached to a condenser the outlet of which is connected with a tube reaching to the bottom of a receiver containing 20 Cc. of water. After macerating the contents of the retort for 3 hours, agitating occasionally, heat is applied slowly and 150 Cc. are distilled over; then 0.2 Gm. of potassium iodide are added to the distillate, followed by a few cubic centimeters of ammonia, and the mixture is rapidly titrated with $\frac{N}{10}$ silver nitrate solution until it becomes permanently yellowish in color. By multiplying the number of cubic centimeters of silver solution consumed by 0.54, the number of grams of hydrycyanic acid obtainable from 1 Kgm. of bitter almond cake is ascertained.—Pharm. Ztg., li, No. 28 (1906), 323.

Hydrocyanic Acid—Use of Borax in Titrations.—Guérin, following in other respects the usual method of titration for the estimation of hydrocyanic acid, finds it advantageous to use borax in place of the potassium hydroxide directed. If, owing to the presence of ammonium salts in the liquid under examination, the precipitation of silver cyanide is retarded, this is obviated by the addition of 10 Cc. of saturated solution of boric acid when operating with the quantities prescribed by the G. P., IV.—Pharm. Ztg., li, No. 10 (1906), 108; from Rép. de Pharm., 1906, No. 1.

Mercuric Oxycyanide—Composition, Preparation, etc.—Briefly reviewing the results and conclusions of Dr. E. Holdermann concerning the chemical formula of mercuric oxycyanide (see Proceedings, 1904, 795), Dr. Karl Holdermann gives the details of comprehensive experiments, which lead to conclusions at variance with those of his relative. He finds that only one mercuric oxycyanide exists. But to this the older formula $HgO.Hg(CN)_2$, properly belongs, and the compound $HgO_2.3Hg(CN)_2$, does not exist. The largest yield of mercuric oxycyanide is obtained by heating an intimate mixture of mercuric oxide and mercuric cyanide in calculated quantities on the water-bath, exhausting the product of the reaction with boiling water and crystallization; but it is not possible to convert all of the mercuric cyanide into oxycyanide with the calculated quantity of mercuric oxide. The determination of the amount of oxide contained in the oxycyanide is rapidly and accurately effected by titrating an aqueous solution, to which sodium chloride and methyl orange have been added, with $\frac{N}{10}$ hydrochloric acid. Qualitatively, the purity of oxycyanide is determined by giving a nearly colorless crystalline precipitate in aqueous solution on addition of potassium iodide, soluble in excess of the precipitant, while impure salts give a yellow color. The commercial oxycyanides are without exception deficient in true oxycyanide, being composed largely of cyanide and otherwise impure products. Unfortunately the characters and particularly the antiseptic properties described in the literature are based upon observations made with the impure commercial compound, and therefore need experimental revision.—Arch. d. Pharm. *243*, No. 8 (1905), 600.

Mercuric Oxycyanide—Doubtful Antiseptic Value.—In a supplementary paper, referring to the doubtful value of mercuric oxycyanide as an antiseptic, Dr. K. Holdermann calls attention to recent experiments by B. Köhler, undertaken to determine the antiseptic value of the newer disinfectants, which are described in a thesis published at Marburg, 1905, and deal particularly with mercuric oxycyanide. The results of Köhler's investigation justify the author's suspicion that the antiseptic efficiency of this substance has been overestimated. Operating with oxycyanide in form of the so-called v. Pieverling's pastilles (composed of mercuric oxycyanide 1 and sodium chloride 1.3 parts), and comparing the disinfecting power with that of corresponding solutions of phenol and of corrosive sublimate, Köhler found the antiseptic action of the oxycyanide to be far inferior to that of either of the two last named. It is interesting to note that Dr. Holdermann's doubts as to the antiseptic efficiency of the oxycyanide were aroused by the observation that the electrical conductivity of its solutions, in comparison with that of solutions of the chloride and the cyanide, gave scarcely any evidence of dissociation, whereas, according to the generally accepted rule, the disinfectant power of mercuric compounds conforms to the degree of their dissociation.—Arch. d. Pharm, *243*, No. 9 (1905), 673.

Mercuric Oxycyanide—Simple Method of Preparation.—K. Holdermann recommends the following method for obtaining perfectly pure mercuric oxycyanide: Dissolve 105 Gm. of mercuric cyanide and 125 Gm. of mercuric acetate in about 1 liter of nearly boiling water; filter the solution, if necessary, and add, with continuous stirring, approximately normal solution of sodium hydroxide (of which about 800 Cc. will be required) until a drop of the liquid will redden phenolphthalein solution. The nearing of the end of the reaction is recognized by the sudden crystallization of the oxycyanide. The mixture is allowed to cool, allowed to stand for a day, and the product, after washing with cold water on a suction filter, is dried in the air. So obtained it is a loose powder which, also slightly colored, is quite pure.—Arch. d. Pharm., *244*, No. 2 (1906), 135.

Mercuric Zinc Cyanide—Indefinite Composition.—D. B. Dott has investigated the characters of mercuric zinc cyanide which, on the recommendation of Lord Lister, has been used to a considerable extent as an antiseptic in surgical dressings. For what is known of the chemistry of this compound we are indebted principally to Prof. W. R. Dunstan, from which it appears that according to the method of manipulation, compounds of variable composition (17.77–36.17 per cent. mercuric cyanide) are obtained, and that his experiments lead to the conclusion that the mercuric cyanide is mechanically retained by the zinc cyanide. It has been maintained, however, that this double cyanide is really a definite compound, and that it consists of "tetra-zincic-monomercuric-decacyanide," a compound which was stated to require 40.65 per cent. mercuric cyanide. Mr. Dodd now points out that this compound would in reality only require 35 per cent. of mercuric cyanide, but that a salt of the stated composition has never been prepared, in fact, the precipitate obtained by the method originally approved by Lord Lister has no fixed or definite composition, and he suggests that 20 per cent. of mercuric cyanide might be arbitrarily accepted as a standard. It should be called simply "zinc and mercury cyanide."—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 486–488.

ALKALIES.

Sodium—Fluorescence of its Vapor.—R. W. Wood has investigated the fluorescence of sodium vapor by allowing light of various wave lengths to illuminate the vapor and then studying the light emitted with a spectroscope. Approximately homogeneous light of any desired wave length is obtained by means of a monochromatic illuminator. Some sodium is placed in a horizontal steel tube fitted with steel ends, in one of which is a circular aperture bored just above the center. The tube is heated and the vapor rises until it reaches the hole. The light from the illuminator passes through the hole and falls upon the vapor, and the fluorescent light is observed by means of a spectroscope either visually or by photography. It is essential that the incident light should not traverse an appreciable amount of the vapor, or the fluorescent effects are masked by those of absorption. The bright lines in the fluorescent spectrum are by no means the exact complement of those in the absorption spectrum. Very remarkable effects have been observed when the vapor is illuminated by a very narrow band of approximately homogeneous light, the lines of the fluorescent spectrum changing their position and appearing to dance about with the slightest change in the wave length of the exciting light. Stokes's law is violated in a most flagrant manner, bright lines coming out on both sides of the excited region. The behaviour of the spectrum indicates the existence of a number of groups of electrons, each group containing a large number of vibrators. The excitation of one of these vibrators sets the whole group going, but does not start disturbances in the other groups. —Pharm. Journ., July 22, 1905, 97; from Bull. Soc. Chim., 1905 (3), *33*, 571.

Caustic Soda—Contamination with Nitrite.—F. H. Alcock says that twenty years ago attention was called to the presence of nitrite in caustic potash and soda, yet we still have the same trouble to contend with in spite of the continued reminders of the text-books. Quite lately two German brands were found to contain much nitrite, its presence being easily detected by the odor on warming an aqueous solution of either with an excess of sulphuric acid. The potassium iodide test when applied to the distillate gave unmistakable evidence of nitrite.—Pharm. Journ., June 16, 1906, 705.

Acid Sodium Sulphates—Two Distinct Compounds.—J. D'Aus has obtained two different acid sodium sulphates. *Trisodium hydrosulphate*, $Na_3H(SO_4)_2$, may be prepared by evaporating a solution containing equimolecular quantities of sodium sulphate and sulphuric acid, when crystalline needles separate out on cooling. When a solution containing 16.5 per cent. of sulphuric acid and 35 per cent. of sodium sulphate is warmed, and sodium sulphate and sulphuric acid are added gradually, in the proportion of 10 Gm. of the salt to about 2 Cc. of concentrated acid, crystals of $Na_3H(SO_4)_2.H_2O$ separate out. Their formation is accelerated by the addition of a crystal to the solution.—Chem. News, June 15, 1906, 280; from Ber. d. D. Chem. Ges., *39* (1906), No. 7.

Rubidium and Cæsium—New Method of Preparation.—H. Moissan, having found that metallic calcium replaces sodium and potassium when heated to a red heat with the chlorides of those metals, and that if the operation be conducted *in vacuo*, the glass of the apparatus is not attacked by the liberated alkali metal, L. Hackspill now finds that the same simple displacement occurs with cæsium or rubidium chlorides and metallic calcium, and on performing the operation *in vacuo* the alkali metal commences to volatilize as soon as a temperature of 400° to 500° C. is attained, and may be collected in a pure state by a process of sublimation or distillation. Now that metallic calcium can be obtained in quantity, this method affords a rapid and convenient means of preparing the pure alkali metals. It is not, however, available for lithium, on account of the light velocity of that metal, which, therefore, forms an alloy with the calcium.—Pharm. Journ., Sept. 16, 1905, 387; from Compt. rend., 1905, *141*, 106.

ALKALINE EARTHS.

Calcium—Properties of the Electrolytic Metal.—When experimenting with electrolytic calcium from the Bitterfeld Electrochemical Works, L. Doermer found that somewhat violent explosions occurred when he struck the metal sharply with a hammer on an anvil. The explosiveness is very much reduced, or is even removed altogether, if implements are used which are perfectly free from rust and iron oxide. Working with a rusty anvil, explosions were always obtained, while if hammer and anvil had been thoroughly rubbed with emery paper they seldom occurred. On gently warming the metal, before a red heat was reached, hydrogen was set free, and if the metal was then heated to a faint red heat all the gas was rapidly absorbed again. When the electrolytically prepared metal is ignited a glow passes through the mass, which fuses to a doughy melt, consisting of metallic calcium. A flame held over the melt during this process is colored distinctly yellowish-red by volatile calcium compounds. If this process is carried out in a crucible and the doughy mass is kneaded with an iron spatulum, gas flames appear and a calcium regulus is obtained, which after cooling is much more stable towards moist air than ordinary calcium. A piece of this calcium after lying in air for eight days showed no external change, while with ordinary calcium a large amount of hydrate was formed. The same behavior was noticed towards water, and the unfused calcium is harder, more brittle, and of a yellowish color.—Chem. News, March 9, 1906, 117; from Ber. d. D. Chem. Ges, xxxix, No. 1, 1906.

Calcium—Alloys with Aluminum.—K. Arndt has had occasion to examine alloys of calcium and aluminum containing 25, 50, and 80 per cent. calcium (denoted hereafter by M_{25}, M_{50}, and M_{80} respectively). Of these, the last is by far the least brittle. The melting-points are M_{25} 765°, M_{50} 1050°, and M_{80} 600°. Although silicon was also present in the alloys from M_{80}, pure calcium could be distilled off at a red heat *in vacuo*, neither silicon nor aluminum coming over. When M_{50} was distilled from an iron tube the calcium coming over contained both aluminum and iron, but was quite pure when a porcelain crucible was used. Thus even large amounts of aluminum can be separated from calcium by simple distillation in a high vacuum. It is noticeable that the melting-point of M_{50} is 250° higher than that of the component (Ca 800°) of higher melting-point. Calcium-aluminum alloys may be prepared by introducing calcium into aluminum, which is fused under potassium chloride. Considerable heat is evolved, and some of the calcium burns away. They may also be prepared by electrolysis, using as cathode melted aluminum. By using an alloy of aluminum and copper as cathode, the author obtained an alloy containing aluminum, copper, calcium and traces of silicon, on electrolyzing fused calcium chloride. He also succeeded in obtaining electrolytically alloys of aluminum and barium containing up to 45 per cent. of barium.—Chem. News., Aug. 18, 1905, 81; from Ber. d. D. Chem. Ges., 1905, No. 8.

Barium—Formation of Colloidal Salts.—Hitherto colloidal salts of the alkaline earths have not been known, but Neuberg has now succeeded in obtaining a number of colloidal barium salts. Thus, if barium hydroxide is dissolved in methyl alcohol and diluted sulphuric acid is added, barium sulphate is precipitated in a gelatinous condition, which it retains even when it is dried over phosphorus pentoxide. On heating to redness the product is converted into porcelain-like, transparent fragments. In the same way other gelatinous barium salts, such as phosphate, oxalate, sulphocyanide, etc., may be obtained.

Colloidal Barium Carbonate is obtained by passing a current of carbon dioxide into the the methyl alcohol solution of barium hydroxide. This solution remains clear at first; but after a few minutes a gelatinous precipitate forms under spontaneous heating, which has the composition corresponding to the formula $BaCO_2.H_2O$. This colloidal carbonate is soluble in water with gradual decomposition, probably with formation of a polycarbonate, corresponding to the polysilicates—the proportions of $Ba : CO_2$ being about 1 : 4. On evaporation the colloidal carbonate remains as a dense celluloid-like mass. Pharmacologically colloidal barium carbonate may prove interesting, since experiments on animals have shown this colloidal carbonate to possess only one-third the toxicity of ordinary barium salts.—Pharm. Ztg., l, No. 81 (1905), 920; from Chem. Ztg., 1905, No. 79.

Barium Carbonate—Dissociation.—The study of the dissociation of barium carbonate has been found very difficult by Alexis Finkelstein, because high temperatures have to be employed, and baryta when hot attacks the material of which the vessels containing it are made, such as platinum, porcelain, and all silicates; the author, however, has found that the exclusion of oxygen stops the action, and that pure nitrogen, baryta and platinum do not act on one another. From the curves he obtained it appears that the dissociation of barium carbonate occurs in two phases; first a basic carbonate is formed; this is easily fusible, melting below 950° C. Its composition appears to be $BaCO_3.BaO$, and it is capable of dissolving BaO and also $BaCO_3$ at a higher temperature. The compound then decomposes into BaO and CO_2. Barium carbonate melts at a temperature above 1350° C. The heat of the dissociation reaction does not vary with the temperature.—Chem. News, June 15, 1906, 280; from Ber. d. D. Chem. Ges., *39* (1906), No. 7.

Magnesium Salts—Delicate Reaction.—J. Bellier finds that magnesium salts may be detected in solutions of 1 : 20,000 by the following method: To 10 Cc. of the liquid to be tested 1 Cc. of a saturated solution of iodine in 1 per cent. potassium iodide solution is added, followed by 15 drops of $\frac{N}{10}$ solution of sodium hydroxide, and shaking. In the presence of 0.1 Gm. of magnesia in 1 liter, the liquid assumes a red-brown color and on standing red-brown flakes are rapidly deposited, while in presence of only 0.06 Gm. per liter, the color is distinctly produced, but no deposit is formed. Ammonium salts, alkalies and acids prevent this reaction.—Pharm. Ztg., li, No. 36 (1906), 403; from Jour. de Pharm. et Chim., 1906, xxii, No. 8.

Carlsbad Salt—Recent Analysis and Comparison with the Artificial Salt of the G. P., IV.—Dr. L. Ekkert has recently made a new analysis of Carlsbad salt in powder, at the request of the municipality of Carlsbad, under whose authority this salt is supplied. The results are shown in the following table, the second column showing the composition of the "artificial salt" if prepared in conformity with the process of the G. P., IV.

Natural Dry Carlsbad Salt.		Artificial Salt, G. P., IV.
Potassium sulphate	3.41 per cent.	2 per cent.
Lithium carbonate	0.19 "	
Sodium bicarbonate	34.04 "	36 "
Sodium carbonate	1.77 "	
Sodium sulphate	42.10 "	44 "
Sodium chloride	18.14 "	18 "
Ferric oxide	0.01 "	
Silicic acid	0.002 "	
Sodium iodide	0.00046 "	
Water	0.32 "	
Ca and Mg	traces.	

—Pharm. Ztg., li, No. 25 (1906), 54.

ALUMINUM.

Alumina—Amount and Determination in Plants.—As the result of a large number of analyses, with carefully selected material, H. Pellet and C. Fribourg found that, in the majority of cases, the proportion of alumina in the ash of healthy and normal plants does not exceed 0.02 to 0.04 per cent. of the total ash. The discrepant statements met with relating to this subject are probably due, in some instances, to the presence of extraneous earthy matter in the roots or other parts incinerated. The following method of determination is recommended as being simple and accurate: A quantity of the hydrochloric acid solution of the ash, equivalent to 1 or 2 Gm., is treated with ammonia until almost neutral; the iron is then converted into the ferric state by means of a little potassium chlorate, and excess of chlorine is driven off; ammonium phosphate, 2 Gm., is then added, followed by ammonium thiosulphate, 10 Gm., and the whole is boiled for fifteen minutes; acetic acid, 15 Gm., is then added, and the precipitate collected, calcined, and weighed as aluminum phosphate; the weight × 0.4185 gives the weight of alumina.—Pharm. Journ., Feb. 3, 1906, 109; from Ann. de Chim. Anal., 1905, 374.

RARE EARTHS.

Terbium—Absolute Atomic Weight.—Urbain's determination of the atomic weight of terbium (159.22) depends on the values $H = 1.007$ and $S = 32.06$ used in the calculation. G. D. Hinrichs applies his correction to the ordinary reduction to determine the absolute atomic weight of terbium. The method used is to weigh the crystalline sulphate, $Tb_2(SO_4)_3,8H_2O$, and weigh it again after complete desiccation, $Tb_2(SO_4)_3$. The author applies his correction, and brings out the absolute atomic weight to be 159.07 as the mean of three experiments.—Chem. News., June 29, 1906, 305; from Comp. rend., *142* (1906), No. 22.

Samarium Subchloride—A New Type of Compound in the Rare Earth Group of Metals.—C. Matignon and E. Cazes find that anhydrous samarium chloride, $SmCl_3$, has the property of being reduced by hydrogen, giving rise to a sub-chloride. This reduction necessitates a high temperature, and is best performed in a thick tube of Jena glass. The substance blackens when the reduction starts, and then melts and apparently boils, owing to the evolution of hydrochloric acid gas. The reaction is reversible, and can be expressed by the following equation:

$$SmCl_3 + \frac{1}{2}H_2 \rightleftarrows SmCl_2 + HCl.$$

The reduction can be better effected by using ammonia gas:

$$3SmCl_3 + 4NH_3 = 3SmCl_2 + 3NH_4Cl + N.$$

It seems probable that praseodymium and neodymium are susceptible of also forming a sub-chloride under suitable conditions.—Chem. News, Febr. 9, 1905, 68; from Compt. rend., Jan. 8, 1906.

Samarium Sulphates—Formation of Acid and Basic Salts.—According to Camille Matignon the normal samarium sulphate can under suitable conditions be transformed either into an acid or basic salt. The anhydrous sulphate when added to excess of sulphuric acid and evaporated at about 200° C., leaves a residue of fine needle-shaped crystals of the basic salt $Sm(SO_4H)$. If this salt is calcined it is transformed into the neutral salt. When this neutral salt is heated to about 1000° C., it is transformed into the basic salt, $Sm_2O_3SO_3$. This latter is an amorphous powder very slightly yellow, and insoluble in water or cold dilute sulphuric acid.—Chem. News, Jan. 26, 1906, 44; from Compt. rend., Dec. 26, 1905.

ZINC.

Zinc Oxide—Detection of Metallic Zinc or Sulphide.—The following method is suggested by L. de Koninck for the detection of metallic zinc or zinc sulphide in zinc oxide; 2 Gm. of the oxide is triturated in a mortar with 20 to 30 Cc. of a 5 per cent. solution of iron alum; sufficient sulphuric acid of six times normal strength to dissolve the oxide is added, and then a single drop of solution of potassium permanganate. The fluid should be colored distinctly red; if metallic zinc or zinc sulphide is present the ferric salt is reduced to ferrous salt, and the permanganate is decolorized.—Pharm. Centralh., xlvi, No. 50 (1905), 947; from Chem. Ztg., 1905, Rep. 5.

CHROMIUM.

Chromium — Compounds of the Higher Oxides.—Wiede has already described the blue salts of the acid H_3CrO_7. E. H. Riesenfeld, H. E. Wohlers, and W. A. Kutsch have now succeeded in obtaining the ammonium, sodium, and potassium salts of the higher acid, H_3CrO_8, by cooling a mixture of water, 25 per cent. alkali, and 50 per cent. chromic acid anhydride solution, and adding, drop by drop, a 30 per cent. solution of hydrogen peroxide. The temperature must not be allowed to exceed 0° C. The solution darkens, and the red salt crystallizes on the bottom of the vessel; the yield corresponds to about 50 per cent. of the hydrogen peroxide used. The blue lower salts, *e. g.*, $(NH_4)H_2CrO_7$, are obtained similarly, but the chloride of the metal and hydrochloric acid are used instead of caustic alkali. The red salts, *e. g.*, $(NH_4)_3CrO_8$, are very unstable, and readily give up oxygen, forming an amorphous powder. They are insoluble in pure alcohol and ether, but are decomposed, yielding chromate and aldehyde if more than 50 per cent. of water is present in the alcohol. All three salts are slightly soluble in cold water. On warming in neutral and alkaline solutions, chromate is formed, while in strongly acid solution perchromic acid is produced, and is almost immediately for the most part converted into chromic salt. On heating the salts oxygen is slowly given up by the potassium salt at 170°, the sodium salt at 110°, and the ammonium salt at 40°C.; when these temperatures are slightly exceeded, explosive decomposition takes place, and chromic oxide is formed. With concentrated sulphuric acid a violent reaction takes place, and chromous oxide is formed in green flakes. In the case of the ammonium salt, a blow will cause a sharp detonation.—Chem. News, Aug. 18, 1905, 81; from Ber. d. D. Chem. Ges. 1905, No. 8.

Ammonium Perchromates—Variable Constitution.—In preparing ammonium diperchromate from chromium hydroxide or ammonium chromate and hydrogen peroxide in presence of ammonia, K. A. Hofman and H. Hiendlmaier find that the amount of ammonia present has a decided influence upon the reaction. If the solution contains either no free ammonia or else ammonia in large excess, crystallized stable products are obtained. It was found that chromic acid mixed with one molecule of hydrogen peroxide in 10 to 20 per cent. ammoniacal solution gives no salt, but unites with three ammonia molecules to form the compound $CrO_4(NH_3)_3$, which is capable of existing in two forms, the second or β-form being produced when the concentration of the ammonia is the highest possible. Investigation of the perchromate shows that it is not a salt, but an amine. For, according to the results of the elementary analysis and of the oxygen determinations, only 9 hydrogen atoms are present to 3 nitrogen atoms, while 3 ammonia groups would require 12 hydrogen atoms. This of course could be explained by supposing that two ammonia groups and 1 amido group are present, but this supposition has been disproved by Wiede. The α- and β-forms behave very similarly, both qualitatively and quantitatively, towards alkalies and acids. To prove that these products are not salts, but amines, the action of acetic acid upon them was investigated. It was then found that the three NH_3 molecules of the peroxide $CrO_4(NH_3)_3$ are not attacked by strong acetic acid. When it is remembered that both secondary potassium chromate and secondary ammonium chromate give up at least half their alkali with dilute acetic acid, this appears to prove that the peroxide contains no ammonium, but amine groups. If ammonium bichromate solution, ammonium nitrate, and hydrogen peroxide are mixed in the cold, ammonium perchromate, $NH_4CrO_5 + H_2O_2$, is formed; this has already been prepared by Wiede.—Chem. News, Oct. 27, 1905, 201; from Ber. d. D. Chem. Ges., 1905, No. 12.

MANGANESE.

Manganese—Supply from the Cape Colony and Borneo.—The troubles which have lately been convulsing the Caucasus region in common with the rest of Russia have had a serious effect on the export of manganese ores to the European and American markets from that quarter. The "Chemist and Druggist" mentions that manganese occurs principally in the form of black oxide, and the chief supplies of this material available for import into consuming countries are those of Russia, India and Brazil. The practical failure of the Russian output during the last few months has led to a rise in price, and the crude oxide is now quoted at rates which are just about double those prevailing before the Russian troubles assumed serious proportions. It is interesting, therefore, to learn that about two years ago a few small consignments of manganese ore from the Cape Colony were placed on the London market. This material proved to contain rather too high a percentage of phosphorus to meet the requirements of smelters, and consequently there were some preliminary difficulties to overcome before a regular demand for Cape ore was created. These obstacles seem now to have been largely removed, and it is stated that consignments of the Cape manganese ore have been regularly received in England of late. Quite recently also large deposits of manganese ores have been discovered in British North Borneo. The exploitation of these is stated to be proceeding rapidly, and it is considered that an export of from 40,000 to 50,000 tons per annum can be maintained easily from this source. Much of the Borneo manganese ore is rather siliceous in character. It seems possible that with the rapidly increasing output of manganese ores from India, and the supplies from the two new sources mentioned, the market may recover a more normal tone in the near future.—Chem. and Drugg., Mar. 3, 1906, 355.

Potassium Permanganate—Solubility—L. Voermann has re-determined the solubilities of potassium permanganate in cold and in boiling water and finds that at 15° C. water is capable of dissolving 4.95 per cent. of this salt. This is equal to 1 part in 19.2 p. of water, and is much nearer to the statement of the G. P. III (1 : 20.5), than to that of the G. P. IV (1 : 16).—Pharm. Ztg., li, No. 10 (1906), 108.

MOLYBDENUM.

Molybdenum—Simple Method of Determination in Minerals.—According to P. Truchot, the following simple test will reveal the presence of molybdenum in any mineral, even when so small a trace as 0.01 Mgm. is present. Molybdic acid is obtained by gently roasting the native or artificial sulphide, or any mineral, so as to get rid of the sulphur, and then heating the product in a porcelain capsule with strong sulphuric acid until the fumes of sulphuric anhydride almost cease to be given off. The mass is then allowed to cool; if it be now breathed upon several times a magnificent blue color is developed in the presence of molybdenum. If vanadium be present a green tint, due to a mixture of blue and yellow, will be given. —Pharm. Journ., Dec. 2, 1905, 761; from Ann. de Chem. Analyt., 1905, *10*, 254.

Ferro-Molybdenums — Formation. — Em. Vigouroux has obtained a series of pure ferro-molybdenums, containing 80 per cent. of molybdenum, by the direct union of iron and molybdenum. Four compounds seem to exist, the lowest definite compound corresponding to the formula Fe_2Mo. This can be obtained from an ingot containing 12.5 per cent. of Mo., by the solvent action of hydrochloric acid, which dissolves only the iron in excess, leaving the iron-molybdenum. He has also obtained and describes the compounds Fe_3Mo_2, FeMo, and $FeMo_2$. The compound Fe_3Mo_2 remains when two of the alloys are exhausted in the cold, either by hydrochloric acid or copper chloride in hydrochloric acid. It has a density of 9.16 and is non-magnetic. The compound FeMo, which can be separated from alloys containing 54 to 63 per cent. of Mo, has a density of 9.01, and is also non-magnetic. The compound $FeMo_2$ can be isolated from alloys containing between 64 and 67 per cent. of Mo, and has a density 9.41.—Chem. News, May 11 and 18, 1906, 223 and 234; from Compt. rend., *142*, (1906), Nos. 14 and 16.

TUNGSTEN.

Ferro-Tungstens — Formation. — Em. Vigouroux finds that by the alumino-thermic method, *pure* ferro-tungstens (wolfram-irons) can be prepared in which the proportion of tungsten reaches 46.25 per cent. These pure ferro-tungstens, when exhausted by dilute hydrochloric acid, which acts upon the free iron only, leave a body in which the proportion of tungsten increases, and is finally maintained at a constant proportion of 68.70 per cent., an amount corresponding to a compound of formula Fe_3W_2.—Chem. News, June 29, 1906, 305; from Compt. rend., *142* (1906), No. 22.

URANIUM.

Uranyl Double Salts—High Radioactivity of Certain Compounds.—The remarkable radioactivity of certain uranyl double salts, having recently formed the subject of several publications, W. Marckwald has also investigated the subject, using for his experiments two uranyl double salts, not hitherto described, namely, the uranyl-ethylene-diamine nitrate and sulphate, and also uranyl-potassium nitrate, uranyl-thallium nitrate and a specimen of uranium nitrate used to prepare these salts. The fundamental experiments of H. Becquerel and of P. and S. Curie on the radioactivity of uranium and its compounds showed that in the many uranium compounds which they investigated the strength of the activity corresponds approximately to the amount of uranium the compound contains. This fact is one of the most important supports of Rutherford's theory of the cause and nature of radioactivity, which has proved so fruitful. It is clear that the foundations of our theoretical views would be destroyed if the assumption of the above authors should prove to be correct, that certain uranium compounds could possess a higher radioactivity than uranium itself. For this reason it appeared of interest to investigate this question thoroughly. The results obtained now by the author show that the above uranium salts emit light-rays, and the potassium and ethylene diaminium double nitrate to a much higher degree than the other salts. Both the double salts differ from the three others externally because of their strikingly beautiful fluorescence. This power of luminescence can be due to one or two causes. The most obvious explanation would be to suppose that these salts, like other phosphorescent substances, emit light for a long time after they have been illuminated. However, the photo-chemical action of these salts is not diminished even after they have been kept in the dark for weeks. Thus there only remains the assumption that in the fluorescing uranium salts part of the Becquerel radiation is converted into light energy, and this conversion is greater the more strongly the salts fluoresce.—Chem. News, March 2, 1906, 98; from Ber. d. D. Chem. Ges., xxxix (1906), 200.

IRON.

Iron Group of Metals—Ebullition and Distillation in the Electric Furnace.—Henri Moissan finds that metals of the iron group—nickel, iron, manganese, chromium, molybdenum, tungsten and uranium have very different boiling-points. Manganese is the most volatile of all, and its distillation can be easily effected before that of lime; after this comes nickel, which boils very quietly. Chromium distills regularly under the action of a current of 500 ampères under 110 volts pressure. The ebullition of iron is much more difficult to obtain, and it is preceded by a violent evolution of the gases which this metal dissolves with so much ease. However, by employing more intense currents, and after the first effervescence has calmed down, the ebullition of iron becomes more regular; in twenty minutes, with a current of 1000 ampères under 110 volts pressure, the author distilled 400 Gm. of iron. Uranium has a still higher boiling-point; ebullition not being produced until 700 ampères is reached. Molybdenum has not been boiled with a current of 700 ampères. The crystalline powder obtained in all these experiments by condensation of the metallic vapor possesses the same chemical properties as the metal reduced to a fine powder.—Chem. News, March 23, 1906, 140; from Compt. rend., *143*, No. 8 (Feb. 19, 1906).

Iron—Microchemical Method of Detection in Organic Substances.—Tartakowsky recommends the following method for the micro-chemical determination of iron in organic preparations: Small pieces of the organ are immersed for 24 hours in Hall's solution (95 Cc. of 70 per cent. alcohol and 5 Cc. of ammonium sulphide), then for 24 hours more in absolute alcohol containing a few drops of ammonium sulphide. The pieces are then superficially washed with distilled water, immersed from ¼ to 1½ hour in 0.5 potassium ferrocyanide solution, and then for 5 or ten minutes in 0.45 per cent. hydrochloric acid. In this way the prussian blue becomes fixed, and the organic substance may then be prepared in the usual way for the microscopic examination. The method is equally applicable for making macrocosmic preparations of the stomach and intestines.—Pharm. Ztg., l, No. 104 (1905), 1096; from Med.-Techn. Journ., 1905, No. 26.

Iron—Influence of Time on G. P. IV Method of Determination.—J. van Itallie has studied the possible influence of time and heat on the accuracy of the potassium iodide method for the determination of iron prescribed by the G. P. IV. He found that a temperature of 50° C. is without influence on the reaction, but that the results are slightly increased by prolonging the time during which the potassium iodide is allowed to react upon the mixture. If this reaction is allowed to continue for 24 hours instead of one hour, the results raise the percentage from 14.93 per cent., indicated after one hour, to 14.99 per cent. In practice the reaction may be continued for six hours without materially affecting the result.—Pharm. Ztg., l, No. 96 (1905), 1009; from Pharm. Weekbl., 1905, No. 41.

Ferrum Reductum—Liability to Oxidation.—C. Hartwich records the results of experiments undertaken with the object of ascertaining the condition favoring the oxidation of reduced iron. A freshly prepared sample, containing 94.87 per cent. of metallic iron, was divided into two portions, *a* and *b*; portion *a* being carefully dried and preserved in a well-closed vessel protected from the light, while portion *b* was kept in a vessel simply closed with a cotton stopper. The contents of the two vessels were examined from month to month during five months. In portion *a*, the metallic iron was reduced to 92.31 per cent. after three months, and to 90.69 per cent. after five months; in portion *b* to 88.73 per cent. in three months and to 87.13 per cent. in five months. A sample prepared in 1897, originally containing 90 per cent. of metallic iron, was also examined, and found to contain only 71.3 per cent., although carefully preserved during all these years.—Schweiz. Wschr. f. Chem. u. Pharm., xliii, No. 32 (1905), 442.

Reduced Iron—Modification of the G. P. Method of Assay.—Cormin-boeuf and Grosman find that the method of the G. P. for determining the percentage of iron in reduced iron is deficient in several respects, the quantity of iron directed (0.3 Gm.) is too small, the period of the reaction is not definitely given; and there is difficulty to accurately weigh the required quantity of iodine (1.5 Gm.) The authors, considering the method a good one in other respects, therefore propose the following modification: Add 1 Gm. of the sample to 25 Cc. of iodine solution (see below), shake the mixture frequently during six hours, dilute with 250–300 Cc. of water, and titrate with thiosulphate to determine the excess of iodine. The iodine solution is prepared from 254 Gm. iodine and 360 Gm. potassium iodide to the liter, and is consequently a double normal solution, each Cc. representing 0.056 Gm. of iron.—Pharm. Ztg., li, No. 36 (1906), 402; from Rép. de Pharm., 1906, No. 4.

Powdered Iron—Industrial Preparation.—The method of producing powdered iron is described in text-books as consisting in pounding iron filings, specially obtained from a pure quality of iron, in steel mortars, and separating the fine from the coarser particles by means of an air blast. Ed. Lücker interestingly describes a method in use in a recently established iron-mill, by which the pulverization is effected by attrition, two sheets of pure malleable iron being caused to rub against each other uninterruptedly, during day and night, for a period that may consume several months. The product is sifted through a very fine bolting cloth, the coarser particles being reduced to impalpable powder by pounding in a steel stamping mill. German iron is not pure enough for this purpose. In this particular mill, Styrian and Swedish iron are used, these yielding a powder containing 98.56 per cent. Fe, and conforming in its reactions to the requirements of the Germ. Pharmacopœia, except that of absence of combined sulphur insufficient to produce an *immediate* brown color with lead subacetate test paper.—Apoth. Ztg., xxi, No. 27 (1906), 271.

"Caput Mortuum"—Origin of the Term Applied to Ferric Oxide.—E. O. V. Lippmann gives the following interesting explanation of the derivation of the term "Caput mortuum" for ferric oxide produced by calcining ferrous sulphate: The Egyptian chemists of the fourth and fifth centuries of the Christian era considered that in all metals there was a certain indestructible elementary substance from which the various metals could be produced by suitable treatment. This substance they endeavored to obtain by calcining, roasting, etc., various ores and salts, the produce of such operations being generally termed "black preparation," "black stone," etc. Egypt is the country of the "black" earth, and Osiris is Lord of Egypt. But Osiris, burnt by Typhon's fire during the period of the low Nile, retires to the lower regions, to return when the Nile rises; and the "black preparation" above referred to is also termed the "grave of Osiris," or "corpse of Osiris," thus comparing the "black preparation" obtained by calcining salts, etc., with the mummy of Osiris, bound round with bandages, and leaving only the head exposed. The head of the dead, therefore, "Caput mortuum," is the only visible part of the body of Osiris, and symbolises the only residue that remains of the metals after they have been roasted and burnt. This expression, at first a generic one, was eventually restricted to ferric oxide.—Pharm. Journ., June 16, 1906, 709; from Chem. Ztg., 1906, *30*, 323.

Ferrous Carbonate—Satisfactory Preparation for Pills.—Sydney C. Gadd recommends the following process for making ferrous carbonate suitable for preparing pills, which are less bulky than the Blaud's pills obtained ordinarily:

Take of

Ferrous sulphate	30 lbs.
Bicarbonate of sodium	21 lbs.
Glucose and water	a sufficiency.

Dissolve the ferrous sulphate in 12 gals. of hot water. Dissolve the bicarbonate of sodium in 30 gals. of warm water (about 50° C.). Filter if necessary. When cool add the iron solution to the soda one in a 60-gal. vessel, with stirring. Fill up the vessel with boiling water. Stir, and set aside. Cover loosely. When cool, syphon off, and reject the clear supernatant liquor. Repeat this twice. Collect the precipitate on calico, and squeeze out the water. Mix the precipitate in a large mortar with 5 per cent. of its weight of glucose. Set aside for seven days. Decant the supernatant water. The finished product contains about 60 per cent. of ferrous carbonate. The process is similar to that for ferri carb. sacch., U. S. P.—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 472.

Acid Ferric Sulphate—A New Salt.—V. Komar finds that if a solution of ferric sulphate in diluted sulphuric acid containing 400 Cc. of monohydrate in a liter is concentrated, a white, crystalline, pulverulent precipitate is obtained, to which the composition $Fe'''H(SO_4)_2.4H_2O$ is assigned, and which appears to be a definite homogeneous substance, and not a mixture. It is soluble in water, yielding a green solution with slightly acid reaction, but containing no ferrous iron. At 100° it decomposes, and when gently heated in a crucible abundant vapors of sulphuric anhydride are evolved.—Pharm. Journ., April 7, 1906, 409; from Chem., Ztg., 1906, *30*, 11.

NICKEL.

Nickel—Dimethylglyoxime a Sensitive Reagent in the Presence of Cobalt.—While the most sensitive test for nickel hitherto known is the brown coloration produced by alkali thiocarbonates, this reaction is considerably affected by the presence of cobalt. L. Tschugaff has now found that α-dimethylglyoxime, $CH_3.C(:N.OH).C(:N.OH).CH_3$, is an exceedingly sensitive and characteristic reagent for nickel. The solution to be tested is freed from excess of acid by the addition of alkali (preferably ammonia or sodium acetate solution), the powdered dioxime is added, and the solution boiled for a short time. A scarlet precipitate of the composition $NiD.DH_2(DH_2 = \text{dioxime})$ is produced. If the nickel is present only in very small quantity a yellowish solution is first obtained, from which the red compound separates out on cooling. By this test it is quite easy to demonstrate the presence of nickel in solutions containing only 1 part of nickel in 400,000 parts of water. The reaction is not in the least influenced by the presence of about ten times the quantity of cobalt. But as the cobalt salts form brown compounds with α-dimethylglyoxime, if larger quantities of cobalt are present it is better to proceed as follows: A large excess of ammonia is added to the solution to be tested, which is then thoroughly shaken up. Any cobalt salts present are thus converted into the cobalt ammonia compounds. Excess of dioxime is then added, and the solution boiled for a short time. When larger quantities of nickel are present (*e. g.*, in commercial cobalt salts) a scarlet scum forms on the walls of the test-tube, but it is generally necessary to cool, filter, and wash the residue with water. If nickel is present it appears pink, colorless if nickel is absent. In this way 0.1 Mgm. of nickel can be detected in 500 Mgm. of cobalt. Dimethylglyoxime can now be obtained commercially. —Chem. News, Sept. 22, 1905, 144; from Ber. d. D. Chem. Ges., 1905, No. 11.

Nickel Sulphate.—Characteristic reaction with *cocaine*, which see under "Organic Chemistry."

LEAD.

Lead—Volumetric Method of Estimation.—O. Mayer describes a method for the volumetric estimation of lead, which depends on the precipitation of the lead with excess of volumetric solution of potassium chromate and determination of the excess of chromate by the iodometric method. The details and advantages of the method may be consulted in Pharm. Ztg., li, No. 26 (1906), 299.

TITANIUM.

Titanium—Preparation of Pure Compounds from the Minerals.—Arthur Stähler and Henry Wirthwein prepare pure titanium compounds from such minerals as rutile, titanium-iron ore or yttrotitanite, as follows: The minerals are mixed with carbon and fused in the electric furnace, when carbides are formed. These are then treated with dry chlorine, and the titanium tetrachloride can be separated by distillation. In order to obtain it free from vanadium it is shaken for forty-eight hours with a little sodium amalgam until it becomes quite colorless. When rutile is treated directly with sulphur chloride the iron and vanadium escape as chlorides, while nearly pure titanium oxide remains behind; it is, however, slowly converted completely into chloride, which cannot be separated from the sulphur chloride by distillation, owing to the close proximity of the boiling-points of the two liquids. The authors find that, contrary to the statement of former investigators, tetravalent titanium is not colored yellow by *pure* ether in presence of alcohol. If hydrogen peroxide is present in the ether the reaction occurs; alcohol need not be present. The authors have prepared and describe a number of compounds of trivalent titanium.—Chem. News, Sept. 22, 1905, 145; from Ber. d. D. Chem. Ges., 1905, No. 11.

Titanium Trichloride—Use for the Volumetric Valuation of Certain Dyestuffs.—E. Knecht and Eva Hibbert find that the powerful reducing action of titanium trichloride may be employed for the volumetric determination of colored organic bodies, which form colorless leuco bodies when two atoms of hydrogen are added to the molecule. The colored substance acts as its own indicator for the titration. To get accurate results the titration must be performed in the absence of air, owing to the fact that the leuco compounds are easily oxidizable. If pure indigotin is sulphonated and the disulpho acid is diluted with water and titrated with titanium trichoride in an atmosphere of carbon dioxide after addition of Seignette's salt, a very sharp end-reaction occurs, the blue coloration suddenly changing to orange-yellow. The results thus obtained agree very well with the theory. With impure specimens of indigo it is best to remove all impurities from the sulphuric acid solution by neutralizing with calcium carbonate. Eosine A, rhodamine B, pararosaniline chlorhydrate, pararosaniline trisulphonic acid, malachite green, and crystal-violet are among the dyestuffs which give satisfactory results when titrated thus with titanium trichloride. In the case of the first two, some alcohol must be added, otherwise the solution becomes turbid on titration, probably in consequence of the separation of leuco compound, and the end-reaction is not sharp. From these results it appears that titanium trichloride may be used for the quantitative determination of some of the most important basic dye stuffs (and in some cases of their sulphonated derivatives), and that it gives more accurate results than any other method. If the titanium chloride solution is ready prepared, the determinations (except in the case of indigo) can easily be performed in twenty to thirty minutes.—Chem. News, Nov. 24, 1905, 248; from Ber. d. D. Chem. Ges., 1905, No. 13.

THORIUM.

Radiothorium—A New Radio-active Element.—Supplementing the announcement before the Royal Society of London, in March, 1905, of a new radio-active element discovered by him in thorium, O. Hahn gives some further particulars and observations concerning this interesting substance, principally in the direction of the efforts made to obtain the element in a pure condition. The name radiothorium is proposed for this constant, strongly radio-active element, which in all probability forms the active constituent of thorium, the latter itself being perfectly inactive. As yet not much is known concerning the chemical properties of radiothorium, The smallness of the quantities available render investigation very difficult. perfectly quantitative precipitations of the active element are never effected, and many chemical operations may therefore easily produce a very considerable dilution of the substance. The reactions of radiothorium, as was expected, appear to be those of the rare earths; but whether radiothorium behaves chemically exactly like radium is very doubtful, and some phenomena argue against it. The occurrence and behavior of radiothorium seem to show the possibility of its being the first slow decomposition product of thorium, which is itself inactive. Between thorium and radiothorium there would thus exist a genetic connection similar to that which exists between uranium and radium, and which has recently been proven by Soddy's investigations.—Chem. News, Dec. 1, 1905, 251; from Ber. d. D. Chem. Ges., 1905, 3371.

Thoria—Separation from the Yttrium-Cerium Group.—W. B. Giles describes a new method of determining thoria in its ores or salts, which depends upon the complete precipitation of thorium by the addition of pure, moist lead carbonate. Excess of this reagent is added to the slightly acid solution of the nitrates of the rare earths and the whole allowed to stand for twelve hours with occasional stirring. The precipitate is filtered out, well washed, and then dissolved in the least possible amount of dilute nitric acid. Hydrogen sulphide is passed through the diluted solution to remove the lead, which is filtered off, the filtrate being then boiled and excess of ammonia added; the precipitate is dried, ignited and weighed as thoria. If ceric nitrate be present in the original solution it should be reduced to cerous nitrate by the action of hydrogen sulphide or sulphurous acid.—Pharm. Ztg., Aug. 5, 1905, 195; Chem. News, 1905, *92*, 1.

Thorium Salts—Preparation and Characters.—In view of the almost prohibitive value of thorium, W. Harrison Martindale, in his paper on "Radium Activity" (see under "General Subjects"), mentioned the comparatively cheap uranium and thorium compounds, and submits the following notes on the latter:

Thorium Salicylate is a basic salt, and is prepared by precipitating thorium nitrate with sodium salicylate. The precipitate is washed with warm water till free from sodium nitrate, and carefully dried. It contains 48 per cent. ThO_2, and is a white, insoluble powder.

Thorium Cinnamate is made by treating sodium cinnamate with thorium nitrate. It contains 38 per cent. ThO_2.

Thorium Ortho-Coumarate is prepared also by double decomposition. First prepare coumaric acid by hydrolyzing 10 parts of coumarin with a solution of 3.5 parts of sodium in 65 parts of absolute alcohol. Heat for 1½ hours on the water-bath. Then dilute with water and evaporate to small bulk. The acid is liberated by means of dilute hydrochloric acid. It is removed and dissolved in sodium carbonate. The sodium salt in solution is then freed from coumarin by shaking with ether (recovering the coumarin).

Thorium Oleate is an interesting body. Of thorium hydroxide 298 parts interact with approximately 1120 of oleic acid. A little ether is added to dissolve the oleic acid. The salt is at first pasty, and becomes hard ultimately. It is suggested for use in the form of an ointment with paraffin bases (10 per cent.).

Thorium Lactate is made by interacting on freshly precipitated thorium hydroxide with lactic acid. It is a crystalline salt, very soluble in water, and permanent in the air.

Thorium Sulphocarbolate.—Para-phenyl-sulphonic acid combines with thorium hydroxide. The salt may be recrystallized from water, but on endeavoring to redissolve the crude crystals in plain water, some basic salt may be formed which is difficult to get into solution—a slight excess of acid is therefore essential.

Thorium Camphor-Sulphonate.—Camphor-sulphonic acid is prepared by acting upon 152 parts of camphor (in solution in acetic anhydride) with 98 parts of sulphuric acid, producing, theoretically, 232 parts of camphor-sulphonic acid. This quantity requires, theoretically, $\frac{278}{4}$ parts of thorium hydroxide for saturation. Well-defined crystals can be prepared.

Thorium Glycerophosphate.—To prepare this, thorium nitrate and sodium glycerophosphate in concentrated solution are mixed, when thorium glycerophosphate is precipitated.

Thorium Quinate is prepared by treating freshly precipitated thorium hydroxide with quinic acid. The salt scales easily.

Thorium Acid Urate.—Prepared by double decomposition of sodium biurate with thorium nitrate. Sodium biurate, $C_5H_3NaN_4O_3$, may be made by neutralizing uric acid with sodium carbonate.—Trans. Brit. Pharm. Conf. (Yearbook of Pharm.), 1905, 437–440.

COPPER.

Copper—Distillation in the Electric Furnace.—Henri Moissan has shown by previous researches that refractory bodies no longer exist, and that while certain compounds are decomposed by simply raising of temperature, others are formed at high temperatures, and according to Violle, again decomposed at a temperature approaching 3500° C. The author had shown in 1892–1893, that all metals can be volatilized in the electric furnace. He records new experiments made on the distillation of copper in the electric furnace, by which he finds that by using a current of 800 ampères under 110 volts, and taking a crucible which can hold several Kgm. of copper, several Kgm. containing 99.76 per cent Cu. may be distilled in a few minutes. He concludes: (1) That copper is readily distilled by the electric furnace; (2) that when the vapor condenses on a cold surface, a filiform deposit of copper is obtained having all the properties of ordinary copper; (3) that at its boiling-point copper dissolves graphite, which separates out in more or less crystalline form on cooling. —Chem. News, Dec. 29, 1905, 302; from Compt. rend., 1905, No. 22.

Copper—Detection of Minute Quantities in Distilled Water.—Karl Ebert, having observed a green coloration of cotton through which distilled water had been filtered to remove mechanical impurities, traced this coloration to the presence of copper, and found that this property is available for the detection of minute quantities of the metal, too small to be detected by hydrogen sulphide or potassium ferrocyanide. To 500 Cc. of the water add two drops of ammonia, and filter the water repeatedly through a pledget of cotton. In the presence of mere traces a faint green color is developed in the cotton.—Apoth. Ztg., xx, No. 89 (1905), 908.

Colloidal Copper Oxide—Preparation.—H. Ley finds that for preparing colloid oxide of copper a salt has to be used which contains a very feeble acid constituent. Copper succinimide is well suited for this purpose. This salt is prepared by the action of a copper-mercury amalgam on mercury succinimide. The aqueous solution of this salt, on being allowed to stand for some days, gradually changes in color from blue-green to brown. On the addition of electrolytes, such as the chlorides and nitrates of potassium and barium, a brown, flocculent copper oxide appears, which may be separated from the unchanged succinimide by dialysis. Hence the brown solution contains the copper oxide in the colloid condition. Like most other metallic hydroxide colloids, it is positive, and migrates to the cathode.—Chem. News, Aug. 18, 1905, 83; Ber. d. D. Chem. Ges., 1905, No. 9.

MERCURY.

Mercuric Oxide.—Action of aldehydes and availability as a distinctive test. See *Aldehydes*, under "Organic Chemistry."

Hydrargyri Oxidum Flavum — Preparation for the Ointment.— G. Pinchbeck, after investigating the various modifications that have been prepared from time to time for the preparation of ointment of yellow mercuric oxide, favors the method of incorporating the freshly precipitated oxide, retaining a definite portion of its adhering water, with a suitable basis. The latter should contain a fat capable of absorbing water, combined with other fats to give the necessary consistence. He has found a combination of 1 part of woolfat with 10 parts of spermaceti ointment (free from benzoin), or white soft paraffin, to give a good basis, but prefers the spermaceti to the paraffin preparation. The yellow oxide is prepared as follows: Effect its precipitation in the usual manner, but in the dark, preferably in a photographic dark-room. Wash the precipitate by decantation, finally transferring to a calico filter, and continue the washing with water till free from alkali (using phenolphthalein as indicator), remove the adherent water by the use of a filter pump, and then dry gently on a water-bath, stopping when not more than twenty per cent. of the water remains—this to be determined by assay. It should then at once be incorporated with the basis selected.—Pharm. Journ., Sept. 9, 1905, 359.

Mercuric Peroxide, HgO_2—Properties.—Antropoff and Bredig have prepared mercury peroxide, HgO_2, which may be regarded as the salt of hydrogen peroxide with mercuric oxide. It has a deep brown color and is extremely unstable, exploding on friction even when immersed in water. In the presence of water it splits off hydrogen peroxide; by small quantities of alkali it is reduced with violent evolution of oxygen; when heated with concentrated sulphuric acid ozone is produced.—Pharm. Ztg., li, No. 29 (1906), 332; from Ztschr. f. angew. Chem., 1906, No. 10.

Calomel—A New Form Obtained by Reduction.—J. Meyer has obtained a new form of calomel by the reduction of mercuric chloride with lithium sulphite. On mixing a solution of 27 Gm. mercuric chloride with a lukewarm solution of 12 Gm. of lithium sulphite, an immediate precipitate of calomel is obtained. On heating the clear filtrate to 70°, small shining scales make their appearance and rapidly accumulate, occupying a considerable volume on subsidence. When heated these scales sublime, forming ordinary calomel, and are reduced to one-sixth their original volume. Their sp. gr. was determined to be 4.5 to 5. This calomel is apparently identical with the Japanese calomel described by Lunge, who obtained it by a dry process.—Pharm. Ztg., li, No. 11 (1906), 117; from Ztschr. f. anorg. Ch., *47*, 399, through Chem. C.-Bl., 1906, l, No. 1.

Mercurous Iodide—Preparation.—B. Szilárd recommends the following process for making mercurous iodide: The metal is finely divided by shaking it with chloroform and the calculated quantity of iodine, dissolved in a large quantity of chloroform, is then added, the mixture being shaken again for a short time. Conversion into mercurous iodide, in form of a yellowish-green powder is almost immediate; this is washed out and dried in the usual way. Considerable heat being developed by the reaction, the vessel must not be hermetically closed during the shaking.—Pharm. Ztg., l, No. 96 (1905), 1008; from Gyógysz. Ertes, 1905, No. 46.

Calcium Iodomercurates—Preparation and Properties.—A. Duboin has obtained and studied the character of several double iodides of calcium and mercury. He finds that a saturated solution of mercuric iodide in calcium iodide when filtered hot and allowed to cool, deposits a very voluminous mass of yellow crystals, which are extremely deliquescent, and correspond to the formula $CaI_2,HgI_2,8H_2O$, and have density 3.258 to 3.337. A second iodomercurate may be obtained from the same solution in the form of very small crystals, and having the formula $CaI_2,5HgI_2,8H_2O$. A third one, by cooling the solution below 0°, appears in the form of long prisms, having the formula $3CaI_2,4HgI_2,24H_2O$, and density 3.56 to 3.66.—Chem. News, March 16, 1906, 127; from Compt. rend., *142*, No. 7, Feb. 12, 1906.

Barium Iodomercurates were obtained by the author in a similar manner to that above outlined.—Ibid., May 11, 1906, 223; from Ibid., April 2, 1906.

Calcium and Barium Mercuric Iodides.—Use as micro-chemical reagents for *Alkaloids*, which see under "Organic Chemistry.

ARSENIC.

Arsenic—Determination of Minute Quantities in Glycerin.—J. Galimard and E. Verdier find that minute quantities of arsenic, which may be present even in the so-called pure glycerin, are evidently present in such combination—possibly in form of esters—that they are not revealed by Marsh's test as usually carried out. If such are present, a positive reaction is, however, obtained by Marsh's test if the glycerin is heated for 10 hours under a reflux condenser with twice its volume of 1 per cent. sulphuric acid, allowing to cool, and then applying the test as usual.—Pharm. Ztg., li, No. 18 (1906), 202; from Journ. de Pharm. et Chim., 1906, xxiii, No. 4.

Arsenic—Reasons for Adopting the Modified Gutzeit's Test in the U.S.P., VIII.—Professor Virgil Coblentz explains the reasons for a modification of the Gutzeit's test for arsenic, U. S. P., 1890, for the revised edition of the U. S. P., VIII, on the ground of the following objections:

1. The use of a filter-paper cap moistened with silver nitrate is objectionable, (a) because this reagent is very unstable when in contact with organic matter, so that the action of diffused sunlight is, at times, sufficient to cause blackening; (b) filter-paper readily occludes gases, such as hydrogen sulphide, which causes blackening of the reagent.

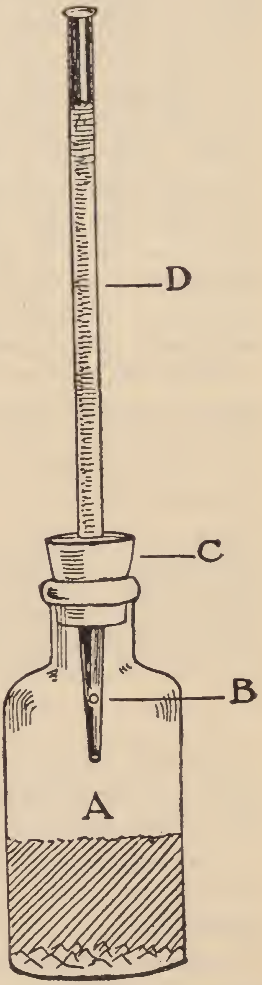
2. The prolonged action of hydrogen gas may give rise to a black stain on the paper cap ($AgNO_3$) even when light is excluded.

3. Moisture carried mechanically up through the paper cap covering the test-tube by means of the escaping gas, will instantly decompose the yellow compound of arsenic and silver, forming a brown to black stain of metallic silver. This leaves the operator uncertain as to whether the stain is due to arsenic, sulphur, phosphorus or other causes.

4. The main objection is as follows: Arsenic when present in chemicals is chiefly in the "ic" state, and nascent hydrogen as generated through the action of the dilute sulphuric acid on the small amount of zinc is insufficient for the complete reduction of the arsenic.—The Apoth., Jan., 1906, 31.

Arsenic—Effective Method of Applying the "Gutzeit" Test.—C. A. Hill and H. S. Collins observe that, although by common consent the most reliable and satisfactory method of detecting and determining small traces of arsenic is the Marsh–Berzelius test in one of its modern forms, analysts, who have constantly to check the arsenic in certain chemicals, naturally prefer as a routine method one which is more expeditious and requires little or no attention. Such is the so-called "Gutzeit" test, which they regard as quite permissible in cases where the results obtained by it have been compared and checked by the Marsh–Berzelius method. To carry out the "Gutzeit" test effectively the authors recommend the apparatus shown by Fig. 51, gradually evolved in the course of an abundant experience during several years, and which has been adopted by several analysts recently in place of the apparatus heretofore used by them. The apparatus consists of an ordinary 4 oz. wide-mouth glass bottle, *A*, fitted with an india-rubber stopper, *C*, carrying a glass tube, *B*, *D*, 200 Mm. long and 5 Mm. internal diameter, open at both ends, the nether end constricted to a point, and provided with a side orifice as shown at *B*, while the upper extremity is expanded to a diameter of 8 Mm. This arrangement allows condensed moisture to drip back into the bottle, while providing a free upward passage for the issuing gas. A roll of lead-paper 10 Cm. in length, prepared by soaking white filter-paper in a 10 per cent. solution of lead acetate and subsequently drying, is placed in the tube and pushed down till its upper end is not less than 2 Cm. from the upper end of the tube, as shown by *D*, and has been found more effective than plumbized cotton. The mercuric chloride paper, which is placed over the upper end of the tube and secured by an elastic band, is prepared by soaking Munktell's No. 3 filter-paper of 5.5 Cm. diameter in a warm, saturated, aqueous solution of mercuric chloride and subsequently drying. In practice it has been found that the results are both more uniform and more accurate when the HCl used contains a small quantity of stannous chloride, whereby the arsenic present is reduced to the "ous" state, and the hydrogen is evolved in a steady stream.—Chem. and Drug., Sept. 30, 1905, 548.

FIG. 51.



"Gutzeit" Test Apparatus.

Arsenic—Modification of Bettendorf's Reagent.—A. Ferraro and Carobbio suggest the following method of applying Bettendorf's reagent for arsenic, which avoids the somewhat troublesome process of preparing this reagent and the necessity of keeping it ready for use: The substance under examination is introduced into a test-tube with a thin piece of tin (about 0.02–0.04 Gm.), 10 to 12 drops of hydrochloric acid are added, and heat is applied for 10–12 minutes. In the presence of more than 0.0005 Gm. of As_2O_3 the liquid assumes immediately an intense red-brown color, probably due to the formation of As_4H_2. Rings of the same color make their appearance, and as the heating progresses the liquid is gradually decolorized, a deposit of black arsenic being formed with elimination of AsH_3. This decoloration may occur even at the ordinary temperature if the quantity of arsenic present is very minute. Under the conditions of the test the development of the color is augmented progressively, reaching its maximum after 2–3 minutes. The authors claim that the test is available in the presence of $\frac{1}{1000000}$ part of arsenic, particularly if the coloration is viewed against a white surface.

Antimoniates, when treated in the same way, yield an immediate black deposit of metallic antimony and the supernatant liquid—if As is absent—appears colorless.—Pharm. Ztg., li, No. 19 (1906), 214; from Boll. Chim. Farm., *44*, 805, through Chem. C.-Bl. 1906, i, No. 5.

Arsenous Iodide—Preparation.—R. C. Cowley and J. P. Catford discuss the unsatisfactory character of much of the commercial arsenous iodide and criticise some of the processes which have been suggested for its preparation. The method depending on the reaction between As_2O_3, KI and HCl, is particularly unsatisfactory, nor is the method of subliming arsenum and iodine, described in Bloxam's Chemistry, or that of fusing the elements together, as formerly directed in the U. S. P., likely to be adopted by pharmacists. Very pure arsenous iodide may however be easily prepared as follows: Powdered arsenum, 10; resublimed iodine, 51; distilled water, 200. Mix the solids with a few drops of the water into a paste in a shallow dish, pour on the remainder of the water, and without stirring, digest at a gentle heat, on a water-bath, for about half an hour; then evaporate quickly with constant stirring to complete dryness. The product should not differ so much as 1 per. cent. from the combined weights of the solids used—*i. e.*, no loss of iodine, and no oxide or uncombined iodine in the product. The arsenum should be pure, and the iodine above the B. P. requirement, as any iodine cyanide, Cl, or Br present would cause a loss of iodine, if not of arsenic. Ordinary commercial iodine is not suitable even if of extra quality.—Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 489–493.

ANTIMONY.

Antimony—Black and Yellow Modifications.—Stock and Siebert describe two new modifications of antimony respectively as "black antimony" and "yellow antimony."

Black Antimony is obtained by the oxidation of hydrogen antimonide by means of oxygen, and also by the spontaneous change of the yellow modification.

Yellow Antimony is obtained by passing a current of oxygen into liquid hydrogen antimonide at —90° C. It is also obtained by the action of chlorine, which takes place according to the equation: $SbH_3 + 3\ Cl = Sb + 3HCl$. Pure yellow antimony was obtained by the reaction between solutions of chlorine and of hydrogen antimonide in liquid ethane at —100° C.; but this is quite unstable, being converted at —90° C. in the dark, into the black modification.—Pharm. Ztg., li, No. 11 (1906), 117; from Ber. d. D. Chem. Ges. 1905, *88*, 3837.

BISMUTH.

Bismuth—Electrolytic Determination.—Hollard and Bertiaux describe the following electrolytic process for the determination of bismuth: The bismuth is separated from copper by precipitating with phosphoric acid, from a solution in sulphuric acid, allowing to stand over night and washing the precipitate with a solution containing 5 per cent. of potassium cyanide and of ammonium sulphide. The precipitate is dissolved in nitric acid, the latter removed by evaporating with 12 Cc. of sulphuric acid, the liquid diluted to 300 Cc., and electrolyzed for twenty-four hours with a current of 0.1 ampère. To separate bismuth from lead the metals in the form of nitrates are evaporated with 12 Cc. of sulphuric acid; after cooling, the mixture is diluted to 300 Cc. with water and 35 Cc. of alcohol added; the mixture is then electrolyzed for forty-eight hours with a current of 0.1 ampère, without filtering off the precipitated lead sulphate, as that contains bismuth that is removed during the electrolysis; if alcohol is not added some lead is deposited with the bismuth.—Pharm. Journ., July 8, 1905, 33; from Ann. de Chim. Anal., 1905, *10*, 11.

Bismuth Chloride.—Formation and Properties of some *New Organic Double Salts*, which see under "Organic Bases."

TANTALUM.

Metallic Tantalum—Successful Production and Technical Importance.—Although tantalum has been known as a distinct element for more than a century, having been discovered in columbite from Massachusetts by Hatchett in 1801, and its compound since studied by Berzelius, Rose, Marignac, and others, it has only very recently been obtained in the pure metallic state. The nearest approach heretofore towards producing the pure metal was that of Moissan who, in 1902, obtained a product containing as impurity only 0.5 per cent. of carbon. It remained for v. Bolton, however, to obtain the absolutely pure metal during the present year (Zeitschrift für Elektrochemie, No. 3, 1905), by two methods: the one depending on the action of the electric current on tantalum oxide in a vacuum; the other on the reduction of potassium—or sodium—tantalum fluoride with the corresponding alkali metal, and subjecting the resulting black powder, composed of metatallic tantalum with some oxides and alkalies, to fusion in the voltaic arc within a vacuum. The latter method gives promise of industrial application, and this is important because of the possibly great technical utility of the metal, dependent on its distinctive physical and chemical characters. Thus, while platinum melts at 2000° C., tantalum is not liquified below 2250°–2300° C. Moreover, its pronounced indifference to chemical action, being among acids attacked only by hydrofluoric acid, renders it superior to platinum for the construction of crucibles, dishes, and other utensils usually made from the latter. Furthermore, its hardness is so extraordinary that it is difficult to penetrate a sheet of the metal even by the diamond, the latter itself being abraded by the prolonged effort. Its most important use, however, will probably be as a substitute for carbon films in incandescent lights, for which purpose its high melting-point, ductility, its resistance to electric volatilization in a vacuum, etc., render it particularly serviceable.—Pharm. Ztg., l, No. 84 (1905), 386.

Tantalum—Alloys of Extreme Hardness.—Much interest has recently been shown in the new uses to which the metal tantalum has been applied, and particularly in the alloys of that metal with steel. According to a recent English patent, granted to Siemens, Holske & Co., of London, tantalum possesses, like steel, the property of being easily worked and hardened; it has also great resistance to fracture and great elasticity. Its hardness can be increased to such an extent as to greatly exceed that of the best kinds of steel and that of the stones usually employed. As regards the greatest degree of hardness which it can attain, it is almost equal to the diamond. It has the further advantage over steel in being one of the precious metals which is not affected by the atmosphere, and which, at ordinary temperatures, completely resists the action of most acids. In the case of mechanisms of precision this property is of the greatest importance. In order to be able to work the metal satisfactorily it must be previously well fused. By the fusing process it is at the same time freed from impurities and brought to a state of a homogeneous body. The fusing is effected best *in vacuo*, and by means of the electric current. As metallic tantalum is at present very expensive, only those parts will, of course, be made of tantalum that are directly subject to strong mechanical action, such as the linings of bearings, the cones and balls for the ball bearings of machines and mechanism, and the like. For many purposes also in place of pure metallic tantalum, alloys of the same can be used which exhibit good properties—for example, alloys of tantalum with iron. —Chem. News, Aug. 4, 1905, 50; from The Times Engineering Supplement, July 26, 1905.

SILVER.

Silver and Gold—Quantitative Determination.—According to C. Goldschmidt silver is precipitated quantitatively from its solutions by boiling them with a sheet of metallic cobalt, the black powder produced being weighed after washing and drying. In the same way gold is quantitatively precipitated by a sheet of metallic nickel, forming a brown powder, which may be weighed after washing and drying. It is of interest to note that nickel and cobalt serve respectively as catalysators of gold and silver. —Pharm. Ztg., li, No. 29 (1906), 333; from Ztschr. f. anal. Chem., 1906, *45*, No. 2.

Silver Iodide—Therapeutic Uses.—According to Siter and Uhle silver iodide has been found serviceable as a substitute for silver nitrate in the treatment of blennorrhoic urethritis. It is said to be employed in form of 5 to 10 per cent. solutions, but the nature of the solvent is not mentioned, and it appears possible that it is employed suspended in a suitable vehicle. As is known, silver iodide (AgI) is a yellow powder, very sensitive to light, and insoluble in water, but soluble in potassium iodide or potassium cyanide solutions. Heretofore it has occasionally been employed as an alterative in gastralgias and syphilis, in doses of 0.005 Gm. in form of pills.—Pharm. Ztg., l, No. 72 (1905), 761; from Bull. Commerc., 1905, No. 7.

Nascent Silver Iodide—A New Form of Exhibition.—M. I. Wilbert calls attention to the possible advantages of a nascent form of silver iodide over ordinary silver salts, and particularly the nitrate, for the purposes of urethral injection, and recommends the following formula for a mixture containing approximately 3 per cent. of silver iodide, which has been in use at the German Hospital, Philadelphia, for some time.

R	Silver nitrate	2.2 Gm.
	Potassium iodide	2.2 Gm.
	Distilled water	50 Cc.
	Mucilage of Irish moss, N. F., to make	100 Cc.

To be mixed according to directions, depending on the degree of fineness of the precipitate of silver iodide desired, which plays an important part in the probable activity of the completed mixture, and permits of its regulation, within a rather wide range, without varying the amount of the contained active ingredient. For a heavy, coarse precipitate the potassium iodide and the silver nitrate are dissolved separately in 5 Cc. of distilled water, the two solutions are mixed, well shaken, diluted with the requisite amount of distilled water, and then mixed with sufficient mucilage to make 100 Cc. For a light flocculent precipitate the salts are separately dissolved, each in 50 Cc. of distilled water, mixed, and after thorough shaking, the precipitate is allowed to subside, so as to allow 50 Cc. of liquid to be decanted, which is replaced by 50 Cc. of mucilage. This mixture should be freshly prepared, and kept in a cool, dark place until consumed. A

Silver Iodide Dusting Powder may be prepared from the finely divided and well washed and dried precipitate. But for the purposes of injection, the contamination of potassium nitrate and excess of potassium iodide, need not be removed unless the proportions are increased so as to exceed 5 per cent. of silver iodide.—Amer. Journ. Pharm., Febr., 1906, 64–68.

GOLD.

Gold—Distillation in the Electric Furnace.—Following the experience derived from the distillation of copper (which see), Henri Moissan by varying the time of action of a current of 500 ampères under 110 volts, acting on 150 Gm. of pure gold, succeeded in distilling as much as 20 Gm. of the metal. He describes at length the residue of gold left in the crucible, which was found free of lime, and also distillation of alloys of gold and copper and of gold and tin. Furthermore, a new "purple of Cassius," obtained by the volatilization of the gold from the tin alloy and the condensation of its vapor on the lime of the furnace. His conclusions are as follows: Gold distils readily in the electric furnace at a temperature above that of copper and below that of lime. In the alloys with copper and tin, these metals distil before the gold, and from the latter alloy purple of Cassius is obtained, which can be varied in color by using different oxides.—Chem. News, Jan. 12, 1905, 22; from Compt. rend, cxli, No. 24 (Dec. 11, 1905).

Gold—Quantitative Separation from Other Metals.—P. Janasch and O. von Mayer find that gold is precipitated quantitatively in neutral, acid or alkaline solution by means of hydrazine. According to the temperature and the presence of certain other elements, the gold precipitate differs in character and color, *e. g.*, it is powdery in presence of chromium, forms spongy conglomerates in zinc solutions, etc., though not the slightest trace of the foreign metal is associated with the gold. Hydroxylamine also separates gold quantitatively in hydrochloric acid solution, but not so energetically as hydrazine, and not at a temperature below 80° C. By means of hydrazine chlorhydrate gold can be separated from most metals, tin being the most notable exception; the gold precipitates always contain more or less tin.—Chem. News, Aug. 18, 1905, 82; from Ber. d. D. Chem. Ges., 1905, No. 9.

Gold—Convenient Method of Determination in Saline Combinations.—C. Goldschmidt finds that gold may be determined conveniently in its saline solutions and in the presence or absence of other metallic salts, by simply boiling the solution in a nickel or nickel-plated vessel. The gold is deposited quantitatively in the form of a brownish powder.—Pharm. Centralh., No. 38 (1905).

PLATINUM GROUP OF METALS.

Metals of the Platinum Group—Ebullition in the Electric Furnace.—Henri Moissan finds that all the metals belonging to the platinum family—osmium, ruthenium, platinum, iridium, rhodium, palladium—are easily melted and can be boiled in the electric furnace with currents varying from 500 to 700 ampères at a pressure of 110 volts. Starting with 150 Gm. of metal, fusion takes one or two minutes, and regular ebullition is attained in about four minutes. Cold water is allowed to flow through a copper tube, which is placed above the crucible in which the experiment takes place. The vapor is condensed on this in metallic drops formed of crystalline layers, each layer consisting of a network of crystals visible only under the microscope. All these metals when in the liquid state dissolve carbon; this latter substance crystallizes out on cooling in the form of graphite. Osmium is the most difficult of all the metals to distil. Palladium is more easily fused than platinum, but is apparently less volatile than either platinum or rhodium.—Chem. News, Feb. 23, 1906, 93; from Comt. rend., l, *142*, No. 4, Jan. 22, 1906.

Platinum—Solubility in Sulphuric Acid.—Marcel Delépin has investigated the conditions under which sulphuric acid attacks platinum, a question on which there exist widely divergent opinions, some experimenters holding that platinum is slightly or slowly attacked by sulphuric acid when heated, others that it is not at all attacked, and still others that it is only attacked in the presence of nitrous acid. The latter view was held by Scheurer-Kestner in papers published in 1875 and 1878, but this was refuted by recent experiments of Conroy 1903, who found that by heating strips of platinum foil in sulphuric acid at about 250° to 280° C., the platinum is always attacked—these being the temperatures of the acid in the retorts during distillation and that nitrous acid, instead of accelerating the action, had in reality a retarding effect. Delèpin's experiments confirm the results of Conroy, in so far as the action of sulphuric acid alone is concerned, but point out that the energy of the reaction depends on the temperature, being at a minimum when the operation is carried out in an open vessel, in which the temperature reaches only 250° to 270° C.; whereas, if the strips of platinum are boiled with the acid in a flask, the temperature reaches 338° C., or more, and the attack becomes decidedly more energetic. Direct experiments also show that the presence of nitric acid has no influence one way or the other, but that as pointed out by Scheurer-Kestner, the presence of ammonium sulphate exercises retarding action in the most perfect manner. Conroy had found this salt to be without any special action, but he operated at about 250° C., and his acid was too slightly enriched with platinum on account of having been heated for an insufficient time for the retarding action to be observed. This effect at 338° C. is such that after obtaining a slight solution, the metal no longer changes weight so long as there are still a few Mgm. of ammonia per 30 Cc. of acid. The reaction may be explained as follows: The sulphuric acid attacks platinum almost at the speed it does silver; the colored solution obtained deposits the greater portion of its platinum if the heating is conducted in the presence of ammonium sulphate, which, thanks to the momentary solution of the platinum, is decomposed. This decomposition has an important bearing on Kjeldahl's method for the estimation of nitrogen, in which spongy platinum is used to regulate the boiling of sulphuric acid. It causes a heavy or the total loss of ammonia, and should therefore never be used in working by this method.—Chem. News, March 9 and 16, 1906, 108 and 120: from Boll. Soc. Chim. (3) *35*, No. 1.

Platinum—Action of Sulphuric Acid.—Referring to the recent researches of Delépin on the action of sulphuric acid on platinum, by which a much stronger attack of the metal is shown than is recorded by Scheurer-Kestner, M. Quennessen undertook a series of experiments with *pure* sulphuric acid, which have thrown some further light on this problem. Summing up, he concludes that with an acid such as is prepared for commercial use, it is the atmospheric oxygen which acts as an oxidizing agent, while with sulphuric acid of greater strength, in the absence of free oxygen, it is the sulphuric anhydride in solution in sulphuric acid which furnishes the oxygen necessary for oxidation, in accordance with a phenomenon of the same character as that which serves for the preparation of sulphurous acids with the common metals.—Chem. News, June 15, 1906, 271.

Palladium Chloride and Bromide—Double Salts with Halogen Salts of Organic Bases.—A. Gutbier states that like platinum chloride, palladium chloride and bromide form double compounds with the halogen derivatives of organic bases. The author has prepared these double compounds with aniline and toluidine chlor- and brom-hydrate, and has found that the products result only when a small quantity of the chlor- or brom-hydrate of the organic base, dissolved in water, is allowed to act upon excess of the solution of palladium haloid. If this action is reversed, *i. e.*, if small quantities of the palladium haloid solution are allowed to act upon excess of the aqueous solution of the organic compound, no double salts are obtained, but compounds which are derivatives of palladosamine chloride or bromide. The same products are obtained by the action of the free bases upon the palladium haloid; it appeared to be immaterial whether the base was mixed directly with the solution of palladium haloid, or whether it was employed in alcoholic solution. The author has established the identity of these products as derivatives of palladosamine, $Pd(NH_3)_2OH$; they are characterized by dissolving in ammonia, forming colorless solutions, which after boiling are precipitated by the corresponding haloid acid, giving the palladosamine chloride or bromide.—Chem. News, Aug. 18, 1905, 82; from Ber. d. D. Chem. Ges., 1905, No. 9.

Palladium Chloride—Therapeutic Uses.—Dr. S. Solis-Cohen praises palladium chloride, $PdCl_2.2H_2O$, as one of the best adjuncts in the treatment of pulmonary tuberculosis. It occurs as a black-brown mass, and is soluble in water, and is given in form of 3 per cent. solution in doses of 5 to 10 drops with some water. The remedy is, however, contra-indicated in the case of nervous individuals or neurasthenics, because of its accelerating effect on the heart's action.—Pharm. Ztg., l, No. 72 (1905), 761; from Pharm.-therap. Rdsch.

Rhodium Compounds—Identification.—E. P. Alvarez recommends the following reactions for the identification of rhodium compounds. The solution of the compound is rendered alkaline with sodium hydroxide, which liberates rhodium hydroxide $(Rh.(OH)_3.H_2O)$, and the solution is then exposed, without heating, to the action of the gases, produced in the cold by a mixture of potassium chlorate and concentrated hydrochloric acid. Under these conditions, even very dilute, almost colorless rhodium solutions assume at first a yellow-red color, soon changing to deep red, and on continued exposure to the chlorinated gases the liquid darkens, becomes turbid owing to the separation of a green precipitate, which eventually is redissolved, forming a blue liquid resembling ammonio-cupric oxide, which now contains the rhodium in form of RhO_4Na_2. Sulphurous acid destroys the blue color, with formation of yellow rhodium sulphates. Sodium peroxide or persulphate also destroy the blue color, with brisk generation of oxygen. Neither chloroform, ether, or benzol are capable of taking up this blue rhodium color, but aniline assumes a red color, with partial reduction of the per-rhodium compound, while the original solution becomes colorless. These reactions distinguish rhodium from the other members of the group of metals to which it belongs.—Pharm. Ztg., li, No. 1 (1907), 10; from Gaz. Chim. ital., 1905, 431.

Osmium—Sensitive and Characteristic Reaction.—P. Alvarez finds that if one drop of a 1 per cent. solution of perosmic acid (OsO_4) is added to a cold mixture consisting of 2 Cc. of a 1 per cent. solution of potassium iodide and 20 drops of hydrochloric acid of 22° B. (or, better, the same quantity of phosphoric acid, sp. gr. 1.7), the mixture will assume an emerald-green color within 1 or 2 minutes. The reaction takes place in accordance with the following equation:

$$OsO_4 + 10HI = I_2Os, 2IH + 4H_2O + 3I_2.$$

On shaking the emerald-green liquid with ethyl ether, the color is transferred to the latter, and the aqueous fluid becomes colorless. The green osmium compound is soluble in water, and more soluble in ether, but is insoluble in benzol or chloroform. By the action of oxidizing acids, the green color is immediately destroyed. Thus, by the addition of nitric acid it is at once changed to red, the change to this color being also spontaneously, although very gradually, effected by exposure to air. Nitrates produce in these acid liquids a black precipitate of osmium dioxide hydrate. Potassium permanganate as also the sulphuric acid solution of potassium dichromate are decolorized. If the green solution is shaken with pure benzol, the compound is decomposed and the iodine liberated passes into the benzol, the decomposition being accelerated by prolonged agitation in the presence of air. The delicacy of the reaction is such that the presence of 0.0005 Gm. of OsO_4 in one Cc. of solution is sufficient to communicate a green color to ether under the conditions above described, and even 1 to 2 drops of a solution of 1 OsO_4 in 10,000 water is capable of showing the reaction under certain precautions.—Pharm. Ztg., li, No. 2 (1906), 18; from Gaz. Chim. ital., 1905, 421.

ORGANIC CHEMISTRY.

HYDROCARBONS.

(*Including Volatile Oils and Derivatives.*)

Naphthalin—Detection in Foods.—J. Thomann recommends the following method for detecting naphthalin in foods: The substance under examination is subjected to distillation with steam, the distillate is shaken out with ether, and the ether is evaporated. The residue so obtained is oxidized with nitric acid and then melted with a little resorcin and a trace of zinc chloride. The product dissolves in water with a tolerably intense green fluorescence if napthalin is present, this being due to the formation of fluorescein which can only be produced from napthalin under the conditions of the test.—Schweiz. Wschr. f. Chem. u. Pharm. xliv, No. 9 (1906), 131.

Petroleum Benzin—Proportion of Carbon Tetrachloride Necessary to Prevent Inflammability.—Dr. Brodtmann finds experimentally that in order to prevent the inflammability of benzin by means of carbon tetrachloride, so much of the latter must be added that the benzin completely loses its identity. When mixed in successive proportions, up to 7 volumes of carbon tetrachloride to 3 volumes of benzin, the mixture still retains its inflammability in contact with a lighted match, and the mixture does not lose its inflammability until the proportions are 9 of the former to 1 of the latter Even here the mixture may be inflamed when it is heated, although the flame is very soon extinguished spontaneously.—Pharm. Ztg., l, No. 67 (1905), 706.

Petroleum Benzin—Antiseptic Value for Wounds.—Regarding the fatty secretions on wounded surfaces to be retarding to the healing process, partly on account of their adhesive qualities and partly because they supply a substratum for micro-organisms, Ed. Cronzel has resorted with marked advantage to petroleum benzin for their removal. If the wound is washed with benzin and the last traces are then removed by carefully touching with an absorbent fabric, the wound is not only thoroughly cleaned, but the surface is hardened and the development of further wound secretions is checked. The application becomes painless if some menthol is dissolved in the benzin, this producing complete local anæsthesia of the part to which it is applied.—Pharm. Ztg., li, No. 26 (1906), 300; from Rép. de Pharm., 1906, No. 3.

Paraffins—Methods of Distinguishing between Different Sorts.—Graefe finds that the behavior of paraffins with concentrated sulphuric acid is available for distinguishing those derived from petroleum from the paraffins derived from mineral wax, ozokerite, etc. If 1 or 2 Cc. of a previviously melted paraffin be superimposed on an equal volume of warmed sulphuric acid of 68° B., and allowed to stand, *petroleum paraffin* remains colorless, and at most communicates a brown color to the acid, which, however, remains clear, while *mineral paraffin* (from ozokerite, brown coal, etc.), assumes a yellow to brown color, and usually also renders the acid turbid. Violent shaking of the two fluids or high, heat, must be avoided, lest the color products formed be washed out of the paraffin by the acid, or, if petroleum paraffin, that colored products of reaction may result from the high temperature. The latter is particularly liable in American petroleum paraffins, whereas Galician petroleum paraffin is comparatively resistent. The author furthermore finds that the source of the paraffin may likewise be determined by the iodine number, as shown by the following table:

	F.	Iodine Number.
1. Soft paraffin	40.8°	5.77
2. Hard paraffin	55.1°	3.98
3. Scotch paraffin	51.4°	3.33
4. American paraffin, semi refined	51.2°	1.92
5. American paraffin, refined	50.8°	1.41
6. Galician paraffin	52.4°	0.385

Nos. 1, 2 and 3 are bituminous paraffin; 4, 5 and 6, petroleum paraffin. —Pharm. Ztg., l, No. 96 (1905), 1010; from Ztschr. f. angew. Chem., 1905, No. 39.

Benzoyl Nitrate—Preparation and Properties.—In a paper read before the Br. Chemical Society by F. E. Francis, it is stated that when benzoyl chloride and silver nitrate react upon each other at a low temperature (preferably at — 15° C.), benzoyl nitrate and silver chloride are formed, as shown by the following equation:

$$C_6H_5COCl + AgNO_3 = C_6H_5CONO_3 + AgCl.$$

In order to ensure that this reaction takes place, care must be taken to free both compounds from traces of moisture. In the presence of moisture explosive decomposition into nitric acid and benzoic acid takes place.—Pharm. Journ., Jan. 6, 1906, 12.

Phenanthren—New Reaction.—C. Reichard has made the observation that when phenanthren quinone is suspended in water and sodium thiosulphate is added in excess, the mixture remains unchanged; but on slowly adding acetic acid, so that SO_2 is developed, the yellow color of the phenanthren quinone slowly changes and after a few days the latter is converted into a cinnabar-red powder, with evolution during that period of hydrogen sulphide. After several weeks' standing, with exclusion of air, a red-brown powder is produced, which suffers no further change, and is evidently a definite compound. The author considers this reaction available for the identification of phenanthren.—Pharm. Centralh., xlvi, No. 42 (1905), 813.

Terpene Compounds—Formation and Distribution in the Sweet Orange.—E. Charabot and G. Lalone, having previously reported on the formation and distribution of terpene compounds in mandarin and bitter oranges, now direct attention to the sweet orange. The main results confirm the conclusions already arrived at. The organs were examined in three stages of development, the first with very young shoots; the second with those more developed; and the third with branches two to four years old. The young leaves are notably richer in odorous constituents than the stems, containing approximately twelve times as much essential oil. In the second stage the total amount of essential oil formed is greater. It diminishes in the stems and increases in the leaves. In the third stage there is a continued diminution of the amount of oil in the stems, and a noticeable lessening of that in the leaves as well. Citral is found to be more abundant in the oil of the leaf than in that of the stems, or of the leaf-stalk. Between the first and second stages the amount of citral in the oil increases directly with the esters; the ratio of combined to total alcohol also increases, ultimately the amount of total alcohols diminishes, and finally esterfication becomes less active.—Pharm. Journ., May 26, 1906, 641; from Compt. rend., 1906, *142*, 798.

Benzaldehyde—Method of Determining Small Quantities—Hérissey recommends a method of determining small quantities of benzaldehyde, such as are produced by the hydrolysis of some glucoside, as follows: The glucoside is suspended in 60 Cc. of water and split up by the aid of emulsin; the reacting fluid is distilled until 50 Cc. of distillate are obtained and mixed with 50 Cc. of a solution containing 1 Cc. of recently rectified phenylhydrazine and 0.5 Cc. of acetic acid in 100 Cc. The mixture is heated 20–30 minutes on a water-bath, the phenylhydrazine precipitate is allowed to settle during 12 hours, collected on a Gooch tile, washed with 20 Cc. of cold water, dried in a vacuum over sulphuric acid, and weighed. By multiplying the weight of the phenylhydrazone so ascertained by 0.54081, the weight of benzaldehyde derived from the glucoside under examination is determined.—Pharm. Ztg., li, No. 19 (1906), 214; from Journ. de Pharm. et Chim., 1906, xxiii, No. 2.

Camphor—Swiss Patented Process of Manufacture.—The Society of Chemical Industry, Basle, Switzerland, has secured a patent for the manufacture of camphor by treating isoborneol, suspended or emulsified in water, with a hypochlorite, in the presence or absence of a small proportion of an oxygen carrier. Example: 100 parts by weight of isoborneol are dissolved in 80 parts of benzin, and into the solution are poured 500 parts of water, whilst stirring. Into this emulsion is poured, in a fine stream, a solution of 200 parts of chloride of lime in 500 parts of water; a little manganese dioxide, say ½ to 1 part, is then added, and the whole is stirred at the ordinary temperature, until all the chloride of lime has disappeared. After a short time the oxidization is complete, whereupon the mixture is distilled in steam. In this example there may be substituted for the manganese dioxide another carrier of oxygen, such as, for example, a salt of nickel or cobalt. So also, instead of chloride of lime, another hypochlorite, such as sodium hypochlorite, may be used. Other examples are given.—Pharm. Journ., April 21, 1906, 482.

Caryophyllin—Chemistry.—H. Meyer and G. Koenigschmid have investigated the chemistry of the crystalline body, caryophyllin, first isolated by Lodibert from cloves. It is isomeric with camphor, but its molecule has the quadruple formula $C_{40}H_{64}O_4$. It is extracted by macerating cloves in cold alcohol, and purified by crystallization from boiling alcohol, from which it separates in white needles, m. p. 295° C. It forms the tetra-acetyl compound $C_{40}H_{60}(OC_2H_3O)_4$, m. p. 268–271° C. It is not a phenol, since it is insoluble in alkalies. When oxidized with nitric acid it gives caryophyllic acid, $C_{40}H_{64}O_{12}$, which is amorphous. Caryophyllin affords Liebermann's cholesterol reaction.—Pharm. Journ., Nov. 25, 1905, 724; from Monats. f. Chem., 1905, *26*, 279.

Cinnamic Aldehyde—Conversiom into Cinnamic Alcohol (Styrone).—The researches of P. Barbier and G. Leser show that cinnamic aldehyde is readily converted into cinnamic alcohol by the reduction of its diacetyl. This diacetyl is easily prepared by adding a few drops of strong sulphuric acid to a mixture of molecular proportions of cinnamic aldehyde and acetic anhydride; the mixture becomes hot, dark-colored, and soon forms a crystalline mass. Excess of sulphuric acid is removed by treatment with sodium bicarbonate solution, the diacetyl dissolved with ether, and purified by recrystallization from alcohol. The pure diacetyl thus obtained is dissolved in 80 per cent. acetic acid, and reduced by means of hydrogen obtained by adding iron filings to the mixture; when the temperature begins to fall, action is aided and continued by heating on the water-bath for about twelve hours. After filtration the liquid is shaken out with ether, the ether distilled off, and the residue fractionated *in vacuo*. The portion distilling between 120°–160° C. under 14 Mm. is collected apart, and saponified with alcoholic soda. The saponification product, again fractionated *in vacuo*, gives as the chief fraction, cinnamic alcohol, $C_9H_{10}O$, boiling-point, 142°–145° C. at 14 Mm. On contact with water it crystallizes in spherical tufts, melting-point 32° C. The yield is about 20 per cent. of the original aldehyde taken, but might doubtless be improved.—Pharm. Journ., Jan. 6, 1906, 12; from Bull. Soc. Chim., 1905, *33*, 858.

Citral—A New Source.—The fact that volumes of lemongrass oil (from *Andropogon citratus*) are now four times greater than they were five years ago, has led manufacturers of citral and ionone to endeavor to find a substitute, and with this object in view inquiries were addressed to the Commercial Intelligence Branch of the Board of Trade as to whether the essential oil distilled from

Backhousia Citriodora, which is reported to have a large citral-content, is obtainable in commercial quantities, and, if so, at what price. The Imperial Institute took the matter up, and a full account of their investigations is given in the current issue of the "Bulletin." First they ascertained that although this oil is known to resemble lemongrass in composition, and to be particularly rich in citral, no considerable quantity has so far been placed on the market. The authorities in Queensland (where the plant is said to be widely distributed) were communicated with as to whether the preparation of the oil from the plant could be undertaken there. This request brought the information that *Backhousia citriodora* is plentiful on the coast between Brisbane and Gympie, but the distillation of essential oils is an industry not yet followed in Queensland, and therefore no price for the oil can be stated. A small quantity of the oil was, however, distilled and forwarded to the Imperial Institute for examination, the results of which are fully set out in the "Bulletin." In brief, the oil proved one of the richest known sources of citral, containing 93.5 per cent. of that constituent, estimated by the bisulphite process, whereas East Indian lemongrass oil only contains from 70 to 80 per cent. of citral, and sometimes less.—Chem. and Drug, July 1, 1905, 17.

Eugenol—New Metallic Compound.—Frankforter and Lands have prepared and describe several new compounds of eugenol with metallic bases.

Lithium Eugenolate, $C_{10}H_{11}O_2Li$, is obtained from alcoholic solution in the form of a well-crystallized salt. When exposed to the air it is rapidly decomposed, but it keeps well in a vacuum or in an atmosphere of hydrogen.

Lead Eugenolate, $(C_{10}H_{11}O_2)_2Pb$, is obtained in form of indistinct crystals, having a very high melting-point. In common with all the other eugenol salts, it is decomposed by water, but far more slowly than the lithium or sodium salt.—Pharm. Ztg., l, No. 64 (1905), 674; from Chem. Centralbl., 1905, ii, No. 4.

Thymol Iodides—Examination of Commercial Sorts.—H. Cormimboeuf calls attention to the possible presence of chlor-iodide in the thymol diïodides of the market, which may account for the variable iodine-content (15 per cent. to 45 per cent.) that has been observed. The examination of such may be conducted as follows: A mixture of 0.5 Gm. of the suspected substance and of 3 Gm. of anhydrous sodium carbonate is gradually melted in a platinum crucible, the melt dissolved in hot water, and filtered. The filtrate is mixed with about one-half its volume of ammonia water, the iodine is precipitated with silver nitrate, and the silver iodide collected and weighed. The ammoniacal filtrate from this retains any silver chloride produced, which is precipitated on acidulation with nitric acid, collected on a filter and weighed.—Pharm. Ztg., li, No. 18 (1906), 202; from Ann. Chim. anal. appl. *10*, 453.

Artificial Perfumes—Importance and Distinction from Synthetic Perfumes.—In concluding an interesting historical and practical description of perfumes, which he classifies under the headings of *natural*, *synthetic*, *organic* and *artificial perfumes*, J. Kemnell makes the following observations concerning the last-named class: As their name implies, these perfumes are chemical products whose odor resembles certain natural perfumes. Thus, trinitrobutyltoluene is useful as a substitute for musk, though natural musk does not contain this product. It is therefore necessary to discriminate between a synthetic, organic, and artificial perfume. Vanillin is a *synthetic* product, since it is the base of vanilla; ionone is an *organic* product, being obtained by means of vervain, and not existing in natural products; whilst trinitrobutyltoluene is an *artificial* perfume, made from chemical products, not being found in any natural product. Whilst it may be said that the manufacture of artificial perfumes is, as yet, only in its infancy as compared with the magnitude that industry will undoubtedly attain with the continued progress made in chemical science, it must be readily admitted that the introduction of artificial perfumes has been a real boon to communities the world over, for without these products the less wealthy of the world's population would have been deprived of that which is now held in such high esteem, and which is within the financial reach of those in the most humble walks of life. As showing that the artificial commodity has not prejudiced the perfumery trade may be mentioned the fact that when synthetic, organic, and artificial perfumes were first introduced certain perfumers in France at once became alarmed as to their positions; it was soon realized, however, that all these products are necessary in the perfumery trade, and that by their combination with natural products it was possible to obtain a fresh and varied assortment of compositions at a lower price, thereby giving good scope for the development of the trade generally.—Pharm. Journ., Sept. 16, 1905, 384–386.

Volatile Oils, Resins and Balsams—Relation of Chemical Composition to Pharmacologic Action.—H. Vieth has made an interesting study concerning the relation of the chemical composition to the pharmacological action of certain volatile oils, resins and balsams, which are recommended, and in use for the treatment of gonorrhœa. These bodies were split up into their several components, namely: Terpenes (or sesquiterpenes), terpene alcohols, resin acids and resenes, with results shown in the following table:

Content of	Terpens, per cent.	Terpen-alcohols per cent.	Resin Acids, per cent.	Resenes.
Oil of turpentine	100	—	—	—
Terpin hydrate	—	100	—	—
Colophonium	—	—	90	10
Copaiba.	55	—	40	5
Para balsam	65	—	30	5
Gurjun balsam	70	—	5	25
Extract (oleoresin? Rep.) of cubeb	65	—	10	25
Oil of santal, East Indian	6	94	—	—
Oil of santal, West Indian	35	65	—	—
Oil of cedar	80	20	—	—
Oil of juniper	90	10	—	—

On testing these individual constituents pharmacologically, both externally and internally on animals and human individuals, it was shown that the terpenes had the most irritant effect on the skin, stomach and kidneys, and next to these, although somewhat weaker, the terpene alcohols exerted a pronounced irritant effect on the stomach and kidneys. The resin acids are devoid of irritant action on the skin and stomach, but incite profuse diarrhœa. The resenes alone are perfectly free from all irritant action. On the other hand, the diuretic action of the individuals of the four groups of substances was found to be practically the same, the distinction in the therapeutic effects being due to the irritant action of the members of the first three groups on the stomach and intestinal tract, while the fourth group is quite or nearly free from any by-effects. A further outcome of the author's studies points out the possibility of producing by the esterification of the terpene alcohols and the resin acids, resin-like substances, which, like the resenes themselves, are free from by-effects. In accordance with this principle a series of esters have been prepared from both santal oil and copaiba—such as santalol salicylate, santalol benzoate, santalol carbonate, and benzoyl copaiba-resin. All of these products are characterized by being nearly odorless and tasteless oily fluids, and will doubtless be exploited in the near future as a new class of diuretic and antigonorrhoic remedies.—Pharm. Ztg., li, No. 11 (1906), 119; from Ztschr. f. angew. Chem. 1906, No. 3.

Resins—New Solvents.—M. Bottler calls attention to the following liquids which are new and considered important solvents for resins: *a*-dichlorhydrin, epichlorhydrin, methylethylketone, terpineol, carbon tetrachloride, and chloral hydrate. The action of these upon a number of resins, chiefly copals, has been investigated, and the results, published in the form of a table, for details of which the original paper should be consulted. As a general rule the softer resins are more easily soluble than the harder. Carbon tetrachloride is miscible in all proportions with ether, benzin, alcohol, turpentine, and drying and non-drying oils, and appears to be specially suited for making varnishes without heat.—Pharm. Journ., April 28, 1906, 501; from Chem. Ztg., 1906, *30*, 215.

Copaiba Resins—Method of Acetylation.—Knoll & Co. have secured a patent on the method of acetylating and esterifying copaiba and its acids, whereby the latter are converted into neutral compounds, which are insoluble in alkali, and while retaining the specific pharmacologic effect on the urinary passages, become devoid of irritant and other untoward by-effects on the alimentary tract. So, for instance, 3 p. of copaiba or 1 p. of the resin acids remaining after distillation, either by themselves or after saponification, are heated for several hours with 1 p. of acetic acid anhydride on a water-bath. The acetic acid formed is removed by distillation in a vacuum or by treatment with weak soda solution. The product so obtained is syrupy, and has the appearance of ordinary copaiba, is devoid of free resin acids, and has a sp. gr. of about 0.984, this varying somewhat in conformity with that of the copaiba from which it is derived. It is readily soluble in alcohol, ether, benzol, chloroform and ligroin (see also preceding abstract, "Volatile Oils, Resins and Balsams").—Pharm. Ztg., li, No. 17 (1906), 192.

Volatile Oils.—Review of Researches During the Year 1904.—I. W. Brandel continues his review of the researches on volatile oils that have been published during 1904, in the "Pharm. Review," from July 1905 to June 1906 inclusive, covering the following subjects: American oil of turpentine, Greek oil of turpentine, Indian oil of turpentine, oil from Canada balsam, oil from Oregon balsam, oil from *Pinus sabiniana* (*F. Jeffreyi*), pine-tar oils (American and Finnan), oil from cones of *Abies alba*, pine-needle oils (from *Pinus silvestris*, *P. strobus*, and "Siberian," from *Abies sibirica*), sandarac resin oil, thuja oil, cyprus oil, oil of juniper berries, oil of red-cedar wood, oil of vetiver, oil from *Andropogon schœnanthus*. Ginger-grass oil, lemon-grass oil, citronella oil, ginger oil, pepper oil from long pepper, oil from *Piper famechoni*, matico oil, oil of *Betula alba*, sandalwood oil, African sandalwood oil, ylang-ylang oil, canango oil, oil of nutmeg, oil of boldo leaves, oil of camphor, oil of (Ceylon) cinnamon, oil of cassia, Japanese cinnamon oil, oil of laurel leaves, and kuro-moji oil, in Nos. 10, 11 and 12, 1905; mountain-laurel oil, oil of mustard, oil from mignonette flowers, oil (Otto) of rose, oil of bitter almond, oil from *Geum urbanum*, oil of raspberry, oil of copaiba, oil from *Amorpha fruticosa*, oil of cassia flowers, oil of rose geranium, oil from *Erythroxylon monogonum*, oil of buchu leaves, oil of lemon, oil from sweet orange branches, oil of bergamotte, oil of limette, oil of neroli, oil of opopanax, oil of elemi, oil of colophonia elemi, oil of linalœ, oil of ambrette seeds, oil of pimenta, oil of bay, oil of cloves, oil of cajaput, oil from *Calyptranthes paniculata*, oil of eucalyptus globulus, oil of eucalyptus resinifera, oil of eucalyptus microcorys, oil of eucalyptus punctata, oil of coriander, oil of caraway, oil of anise, oil of fennel, oil of angelica, East Indian dill oil, primula-root oil, oil of jasmine, oil of verbena, oil from *Lippia urticoides*, oil from *Lippia geminata*, oil from *Lippia microcephala*, oil of sage, oil of monarda didyma, oil of monarda citriodora, oil of wild thyme, oil of peppermint, oil of mentha citrata, oil of patchouly, oil of sweet basil, oil from *Ocimum carnosum*, oil from *Ocimum micranthum*, oil from *Hyptis spicata*, oil from *Hyptis salzmanni*, oil from *Hyptis fasciculata*, oil from *Peltodon radicans*, oil of elder blossom, oil of dog fennel, oil of ambrosia artemisiæfolia, oil of tansy, oil of tanacetum boreale, oil of artemisia vulgaris, oil of artemisia herba-alba, oil of wormwood, bardana oil, oil of calumba root, sheih oil, gouft oil, and essence de bruyere, in Nos. 1, 2, 3, 4 and 5, Pharm. Rev. 1906.

The Essential Oils of the United States Pharmacopœia is the subject of a critical review presented in a comprehensive paper by John C. Umney and C. T. Bennet at the meeting of the British Pharmaceutical Conference in 1905. The authors must be regarded as representing the most competent authorities on the subject of essential oils, and their criticisms and comments are therefore the more gratifying since they confirm the care with which the revisors of the U. S. Pharmacopœia have reflected the most modern research-work on essential oils in the pages of that standard. The paper, dealing with the entire official list of essential oils, is too voluminous for profitable condensation and must therefore be consulted in the original in Trans. Brit. Pharm. Conf. (Yearbook of Pharmacy), 1905, 404–419.

The Volatile Oils of the U. S. P. VIII—Correction of Specific Gravity Factors.—In their "Semi-Annual Report" for April–May, 1906, Schimmel & Co. devote considerable space to a discussion and criticism of the requirements specified by the new U. S., Spanish, and Austrian Pharmacopœias for the volatile oils admitted to them, briefly quoting the requirements and in each case directing attention to whatever may need supplementing or correcting, so as to prevent any misunderstanding which might arise in judging individual oils on the basis of the pharmacopœia in question. The high character of this firm, the magnitude of its business, and the exceptional opportunities offered to its staff of chemical experts for experimental and research work, warrants that more than passing notice shall be given in this report to the criticisms made on this important subject, which may, indeed, be regarded as a welcome and useful contribution for the guidance of the Committee of Revision of the U. S. P.

Concerning the new edition of the U. S. P., it is regarded as having deservedly met with approbation. "There are everywhere evidences of a serious effort to make the widest possible use of the achievements of science; particularly is this the case in the directions for testing. This also applies especially to the essential oils, which are mostly described in detail in such manner that the American Pharmacopœia may in this respect be characterized to a certain extent as typical. This favorable opinion of the whole does not preclude that some statements made in the Pharmacopœia are not correct, and also that several directions for testing call for criticism."

Leaving these for consultation in the original, the following concerning the specific gravities specified by the U. S. P. may find place here. It is now well known that the new U. S. P. does not indicate the specific gravities of the volatile oils, as is usually done, at $\frac{15^\circ}{15^\circ}$, but at $\frac{25^\circ}{25^\circ}$. This rule has induced Schimmel & Co. to determine, for all the volatile oils included in the Pharmacopœia, the differences existing between the specific gravities at $\frac{15^\circ}{15^\circ}$ and at $\frac{25^\circ}{25^\circ}$, so as to form an opinion whether and in how far the limits of value given in the Pharmacopœia agree with that obtained at 15° C. They have here in several cases found more or less considerable differences, which are indicated in the following table by the figures in *heavy type*. These limits, printed thus, cannot and should not, in the opinion of Schimmel & Co. be accepted as such, for they are inconsistent with the values fixed at 15° C., and are consequently incorrect.

	$d\frac{15^\circ}{15^\circ}$	$d\frac{25^\circ}{25^\circ}$	Difference.	Limits of value, at $\frac{15^\circ}{15^\circ}$	Limits of value, at $\frac{25^\circ}{25^\circ}$	American Pharmacopœia $\frac{25^\circ}{25^\circ}$
Anise Oil	0.9915	0.9855	0.0060	0.984—0.994	0.978—0.988	0.975—0.985
Benzaldehyde	1.0584	1.0515	0.0069	1.050—1.055	1.043—1.048	about 1.045
Bitter Almond Oil	1.0655	1.0587	0.0068	1.045—1.070	1.038—1.063	1.045—1.060
Cajeput	0.9215	0.9151	0.0064	0.919—0.930	0.913—0.924	0.915—0.925
Caraway	0.9080	0.9023	0.0057	0.905—0.915	0.899—0.909	0.905—0.915
Cassia Oil, rect	1.0551	1.0489	0.0062	1.053—1.065	1.047—1.059	1.045—1.055
Chenopodium Oil	0.9769	0.9706	0.0063	?	....	0.965—0.985
Cinnamic Aldehyde	1.0560	1.0504	0.0056	1.054—1.058	1.048—1.052	about 1.047
Clove Oil	1.0487	1.0422	0.0065	1.040—1.060	1.033—1.053	1.040—1.060
Copaiba Oil	0.9056	0.9002	0.0054	0.900—0.920	0.895—0.915	0.895—0.905
Coriander Oil	0.8739	0.8672	0.0067	0.870—0.880	0.863—0.873	0.863—0.878
Cubeb Oil	0.9214	0.9159	0.0055	0.915—0.930	0.909—0.924	0.905—0.925
Erigeron Oil	0.8865	0.8803	0.0062	0.850—0.870	0.844—0.864	0.845—0.865
Eucalytol	0.9294	0.9227	0.0067	0.928—0.930	0.921—0.923	0.925
Eucalyptus Oil	0.9146	9.9083	0.0063	0.910—0.930	0.904—0.924	0.905—0.925
Eugenol	1.0716	1.0650	0.0066	1.071—1.074	1.064—1.067	1.072—1.074
Fennel Oil	0.9715	0.9653	0.0062	0.965—0.977	0.959—0.971	0.953—0.973
Hedeoma Oil (Oil of Amer. Pennyroyal)	0.9331	0.9271	0.0060	0.925—0.940	0.919—0.934	0.920—0.935
Oil of Juniper Berries	0.8655	0.8593	0.0062	0.860—0.885	0.854—0.879	0.860—0.880
Lavender Oil	0.8864	0.8797	0.0067	0.882—0.895	0.875—0.888	0.880—0.892
Lemon Oil	0.8585	0.8527	0.0058	0.857—0.861	0.851—0.855	0.851—0.855
Mustard Oil	1.0200	1.0120	0.0080	1.016—1.025	1.008—1.017	1.013—1.020
Nutmeg Oil	0.9037	0.8972	0.0065	0.870—0.930	0.864—0.924	0.862—0.910
Peppermint Oil	0.9060	0.9006	0.0054	0.900—0.920	0.895—0.915	0.894—0.914
Pimenta Oil	1.0440	1.0372	0.0068	1.025—1.055	1.018—1.048	1.033—1.048
Rose Oil *	......	0.8625	......	....	0.854—0.867	0.855—0.865
Rosemary Oil	0.9077	0.9011	0.0066	0.900—0.920	0.893—0.913	0.894—0.912
Safrol	1.1054	1.0985	0.0069	1.105—1.107	1.098—1.100	1.105—1.106
Sandalwood Oil	0.9782	0.9735	0.0047	0.975—0.985	0.970—0.980	0.965—0.975
Sassafras Oil	1.0807	1.0740	0.0067	1.070—1.082	1.063—1.075	1.065—1.075
Savin Oil	0.9208	0.9150	0.0058	0.910—0.930	0.904—0.924	0.903—0.923
Spearmint Oil	0.9352	0.9290	0.0062	0.920—0.940	0.914—0.934	0.914—0.934
Sweet Orange Oil	0.8509	0.8452	0.0057	0.849—0.853	0.843—0.847	0.842—0.846
Thyme Oil, white	0.9068	0.9007	0.0061	0.900—0.935	0.894—0.929	0.900—0.930
Turpentine Oil	0.8682	0.8616	0.0066	0.865—0.875	0.858—0.868	0.860—0.870
Turpentine Oil, rect.	0.8708	0.8643	0.0065	0.860—0.871	0.853—0.864	0.860—0.865
Wintergreen Oil:						
(a) from *Betula lenta*, L.	1.1870	1.1794	0.0076	1.180—1.188	1.172—1.180	1.172—1.180
(b) from *Gaultheria procumbens* L.	1.1864	1.1788	0.0076	1.180—1.188	1.172—1.180	1.172—1.180
(c) artificial	1.1896	1.1817	0.0079	1.185—1.190	1.177—1.182	1.180—1.185

In the above table, differences of 1 in the third decimal have been left out of account, as they lie within the limits of error. The differences between the specific gravities determined at $\frac{15^\circ}{15^\circ}$ and at $\frac{25^\circ}{15^\circ}$, as above given, agree well on the whole with those ascertained previously by Schreiner and Downer (see Proceedings, 1901, 377–391), and also the average value of these differences is the same as that found by those authors, viz.: 0.00064 per degree of temperature.—Schimmel's Rep., April–May, 1906, 69–86.

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* The limits of value given for rose oil were based upon those in force for $\frac{30^\circ}{15^\circ}$

Essential Oils—Consumption in the Plant During Flowering.—In continuation of their researches on the formation and functions of essential oils in plants (see Proceedings, 1905, *et ante*), E. Charabot and A. Hébert, by comparative experiments with basil, *Ocymum basilicum*, show that by removing the inflorescences as they are formed the weight of essential oil produced by each plant is almost doubled. It is also found that old inflorescences which have accomplished their essential functions contain less oil than those removed before. The absolute weight of oil remaining in the green parts of each plant increases in consequence of the removal of the flowering tops. In short, for the same weight of material formed in a plant, more oil is present in one deprived of its reproductive functions. It therefore follows that the process of fructification gives rise to a consumption of odorous principles, or, at least, of material contributing immediately to the formation of these principles.—Pharm. Jour., Febr. 10, 1906, 129; from Bull. Soc. Chim., *33*, 1121.

Commercial Volatile Oils of the Coniferæ—Examination.—Geo. R. Pancoast, M. D. and Willard Graham communicate in a series of tabulated statements the results of their examination of a large number of samples of volatile oils (mostly foreign) derived from the Coniferæ, which are highly instructive since they exhibit the great variation in the character and constants of coniferous oils marketed under the same name and claim as to source. They find that most of the oils are mixtures of more than one variety of needles and cones, in some cases possibly the twigs, and in others the wood added, so that the findings are never the same. The authors, furthermore, express the hope that in the near future some one may distill some of the *American-grown Coniferæ*, and thus present an authentic set of constants. They have, in connection with this paper, made their first venture in this work, by offering their findings in the

Oil of Tsuga Canadensis (Hemlock). A lot of authentic needles and twigs of *Tsuga Canadensis*, with no admixture of other needles, was procured in the spring of 1904; but after distillation it was learned that they contained no oil or not enough to examine. Another lot was then secured in the fall of that year, and from this a rather scant amount of light-green colored oil was obtained. This had a characteristic odor, the sp. gr. 0.9665, an optical rotation of —11° 31′, and was soluble in 95 per cent. alcohol in all proportions. The percentage of bornyl acetate could not be taken as the amount of oil was so small. Regarding the oil of hemlock of commerce, the authors quote the statement of Gildermeister and Hoffman that the needle of the hemlock and those of the two spruce trees (*Picea alba* and *P. nigra*) are gathered together and therefore the oil of hemlock of commerce is a mixture of any two or all three of them. —Proc. Pa. Pharm. Assoc., 1905, 184–192.

Turpentine Oils—Valuation by Bromination.—Dr. Wilh. Vaubel recommends a method for the valuation of commercial turpentine oils which depends upon the formation of bromine addition-products in proportions varying with the nature of the oil. The process as recently improved by the author is carried out as follows: 1–2 Gm. of turpentine oil are dissolved in chloroform, about 100 Gm. of water, 5 Gm. of potassium bromide and 10 Cc. of hydrochloric acid, or the equivalent quantity of sulphuric acid, are added, and titrated solution of potassium bromate is added until a permanent reaction for bromine is obtained. This is recognized by the decided color assumed by the chloroform solution, but may also be determined by moistening potassium iodide starch paper with a drop of the aqueous portion of the reacting fluids. The total amount of bromine consumed gives the quantity required for the tetrabrom addition product initially produced, which subsequently, on application of gentle heat, etc., is converted into the substitution-product containing just one-half as much bromine. The results obtained by the method are exhibited in the following table:

Kind of Oil.	Sp. Gr. at 15°.	Rotation $(a)_{D}$.	100 Gm. require Bromine for	
			Substitution Gm.	Addition Gm.
Oil of Turpentine:				
American, *a*	—	—	115	230
American, *b*	—	—	110	220
American, *c*	0.8677	+ 1.2°	116	232
American, *d*	—	—	112	224
American, *e*	—	—	109	218
American, *f*	—	—	102	204
French	0.8651	—31.3°	120	240
German	0.8663	+11.2°	87.6	175.2
Oil of Pine Wood ("Kienoel"):				
Rectified	—	—	97	194
Russian	—	—	72	144
Resin Oil	—	—	89	178
Surrogate, *a*	—	—	8.2	16.4
Surrogate, *b*	—	—	—	—

According to the equation, $C_{10}H_{16} + 4\ Br = C_{10}H_{16}Br_4$, it is shown that 100 Gm. of pinene require 254 Gm. of bromine for addition; hence some of the turpentine oils conform very closely to pure pinene, though the average of commercial oils is between 86 and 90 per cent. The author considers the determination of the bromine number to be a superior criterion of the quality and source of turpentine oils than its optical properties, the more particularly since it is well known that oils of American origin have occasionally been found that are lævo instead of dextrorotatory.—Pharm. Ztg., li, No. 23 (1906) 257.

Pine-Needle Oils—Properties of Authentic Specimens.—Schimmel & Co. have recently had occasion to distil oils of *Pinus pumilio* and of the needles of *Abies alba*, from material which had been obtained from Styria, and was worked up cut into very small pieces. The crude

Oil from Pinus Pumilio, was of a yellow color and obtained in a yield of 0.41 per cent. It began to boil at 170° C. (746 Mm. pressure); at 203° C., 67 per cent. had distilled over; sp. gr., 0.8685, at 15° C.; $(a)_D$, —11° 3′; acid number, 1.4; ester number 16.8 = 5.9 per cent. bornyl acetate; soluble in about 2.5 or more vol. 90 per cent. alcohol. The

Oil from the Needles of Abies Alba, was obtained in a yield of 0.56 per cent.; sp. gr., 0.8852 at 15° C.; $(a)_D$, —34° 55′; acid number, 0.9.; ester number, 17.5 = 6.1 per cent. bornyl acetate; soluble in 6.5 or more vol. 90 per cent. alcohol. The oil begins to boil at 162° C.: up to 185° C., 55 per cent. passed over.—Schimmel's Rep., April–May, 1906, 57.

Pine-needle Oils—Adulteration with American Turpentine Oil.—Schimmel & Co., calling attention to the growing scarcity of the oil from *Pinus Montana*, which is nowadays used in large quantities, mixed with chloroform, as an embrocation, mention that an oil of pine needles, offered at a low price, proved to be adultered with American turpentine oil, as was shown by the following results of examination: Specific gravity, 0.8682; a_D + 6° 43′; ester number, 1.69, corresponding to 0.59 per cent. bornyl acetate; solubility, in 7 or more volumes of 90 per cent. alcohol. Subjected to fractionation, 34 per cent. passed over up to 160°; 36 per cent. from 160° to 165°; 13 per cent. from 165° to 170°; 3 per cent. from 170° to 175°; 6 per cent. from 175° to 190°; leaving a residue of 8 per cent. In the case of pure oil from *Pinus montana*, practically nothing passes over below 160° if the fractionation is carried on, as in the above examination, under a pressure of 753 Mm.

Templin Oil distilled from the cones of *Abies alba* Miller, at Bodenbach, possessed a powerful limonene odor, and showed the following constants: Sp. gr., 0.8551; a_D, — 76° 58′; ester number, 2.44 = 0.85 per cent. bornyl acetate; solubility, in 7 or more volumes of 90 per cent. alcohol.—Schimmel's Rep., October–November, 1905, 59.

Oil of False Savin (Juniperus Phœnicea)—Characters of Distinction from True Savin Oils.—Having found a sample of savin oil, submitted to them by one of the largest and most reputable distillers in the south of France, to have characters which were entirely different from the hitherto accepted standards for pure oil, John C. Umney and C. T. Bennett secured specimens of the plant from which the oil had been distilled, together with particulars regarding the methods of distillation, yield of oil, etc. The oil was entirely different from those offered by German, American, and English distillers, and agreed closely with some of the oils that they had hitherto examined, and looked upon as sophisticated with oil of turpentine. Examination of the plant revealed at once certain divergence from *Juniperus sabina*, and led them to the conviction that the plant yielding the oil in question is *Juniperus Phœnicea*, the common Mediterranean species of savin, which has long been recognized as closely resembling in its foliage that of the true savin, for which, according to Flückiger and Hanbury (Pharmacographia, 1874, 568) it is sometimes substituted, although quite destitute of the odor of the latter. The chemical examination of the French oil gave results which are exhibited, along with true savin oil of English and German origin, in the following table:

	English. From *J. Sabina.*	German. From *J. Sabina.*	French. From *J. Phœnicea.*
Specific gravity	0.909	0.920	0.892
Optical rotation	+68°	+42°	+4°30′
Esters	47.6 per cent.	36.5 per cent.	9.3 per cent.
Total sabinol	52.1 per cent.	48.2 per cent.	17.1 per cent.
Solubility in 90 per cent. alcohol	1 in 1	1 in 1	1 in 5
Portion distilling:—			
Below 155° C	nil.	nil	18 per cent.
Below 165° C	nil.	nil	64 per cent.
Below 175° C	14 per cent.	nil	68 per cent.
Below 180° C	23 per cent.	4 per cent.	80 per cent.
Below 200° C	48 per cent.	29 per cent.	82 per cent.
Below 220° C	62 per cent.	49 per cent.	84 per cent.
Below 230° C	80 per cent.	60 per cent.	86 per cent.

Besides reactions for an aldehyde, which was present in minute quantities, the oil contained 71 per cent. of pinene and some cadinene, but the authors were unable to isolate a camphene. The deficiency in the esters and sabinol, as compared with the true oils, sufficiently accounts for the deficiency in odor of the false oil. The presence of large pinene-content doubtless also has its influence on the physiological activity of the oil from *J. Phœnicea.*—Pharm. Journ., Dec. 16, 1905, 827.

Sicilian Essential Oils—Examination of Kinds not heretofore Supplied from Italy.—John C. Umney and C. T. Bennett communicate the results of an examination of samples of essential oils submitted to them by the Sicilian firm, Santi de Pasquale et Figli. They remark preliminarily that the fact that it is only for a comparatively brief period of the year during which the oils of lemon, bergamot and orange are prepared, and that for the preparation of terpeneless oils vacuum stills have been erected, has undoubtedly led some of the more enterprising and scientific of those handling the Sicilian peel oils to look about them for business to occupy their attention during the other periods of the year. Omitting the details of this interesting paper, the following abstract is confined to the characters and constants of the several oils examined:

Sicilian Peppermint Oil.—Distilled in July, 1905, from black peppermint plants, when the buds were just appearing, and rectified by distillation *in vacuo*, sp. gr., 0.906; optical rotation in 100 Mm. tube, —21°; total menthol, 41.6 per cent.; free menthol, 36.9 per cent.; esters, 6.0 per cent.; solubility, 1 in 3 of 70 per cent. alcohol.

Sicilian Origanum Oil.—A highly rectified oil, probably derived from *Origanum creticum.* Sp. gr., 0.920; optical rotation, nil, or very slightly lævogyre; phenols (principally carvacrol), 44 per cent.; solubility in 2 vol. of 80 per cent. alcohol; 48 per cent. distilled over below 220° C.

Sicilian Geranium Oil. Distilled from plants (probably several species of *Pelargonium*) grown on dry soil, of a green color and very pleasant odor. Sp. gr., 0.894; esters, 35.6 per cent. calculated as geranyl tiglate; total geraniol, 71.9 per cent.; solubility, in two vol. of 80 per cent. alcohol, but not in 70 per cent.

Sicilian Oil of Pennyroyal. Distilled (and highly rectified) from wild growing plants, believed to be the true *Mentha pulegium*, which is common throughout Southern Europe, Algeria, etc. Sp. gr., 0.927; optical rotation, + 35°; pulegone (distilling between 212° and 220°), 75 per cent.; solubility, in 2 vol. of 70 per cent. alcohol.

Sicilian Oil of Lemon Leaves. Distilled from the leaves of the lemon tree. Sent under the title of "petitgrain citronnier;" odor very agreeable, but widely different from the oil of petitgrain distilled from the leaves of the orange plant, and contains a very large proportion of citral. Sp. gr., 0.873; optical rotation, + 26°; esters, 9.4 per cent.; total acetilizable constituents, 38.9 per cent.; aldehyde, principally citral, 29 per cent. Commences to distil at about 175°, 30 per cent. passing over between 175° and 180°, probably limonene.

Sicilian Oil of Nepeta. This is so different from any hitherto examined oil of nepeta (either catnip or ground ivy), that there is some doubt as to the source. The authors consider it not improbable that the plant yielding it is *Mentha requieni*, which it resembles in odor. Sp. gr., 0.927; optical rotation, + 12°; total alcohols, calculated as menthol, 22.2 per cent.; esters, calculated as menthyl acetate, 3.3 per cent.; a small proportion of ketone (menthone or pulegone); solubility, in 2 vol. of 70 per cent. alcohol.—Pharm. Journ., Dec. 23, 1905, 860.

Bitter Almond Oil—Spontaneous Formation of Benzoic Acid.—The observation that benzaldehyde as well as the natural oil of bitter almond is partially converted into benzoic acid by the action of atmospheric oxygen, is not new, but these changes have heretofore been observed only on the neck and stopper of the container. Ed. Lücker now calls attention to a sample of oil, designated as "Ol. Amygdalar. aether. sine acido hydrocyanico," and half filling a 500 Cc. bottle provided with a glass stopper, the entire content of which, after the initial deposit of a few crystals, became a solid crystalline mass of benzoic acid in the course of a few months, notwithstanding that it had been carefully kept in a cellar provided for the storage of medicines. This auto-oxidation is probably due to the presence of ozonized oxygen in the benzaldehyde affected.—Apoth. Ztg., xx, No. 104 (1905), 1044.

Oil of Backhousia Citriodora—Character and Constants.—As a result of the inquiries above recorded (see Citral), the oil of *Backhousia citriodora* is now placed on the market, and John C. Umney and C. T. Bennett find it to have the following characters:

Specific gravity	0.895–0.896.
Optical rotation	Inactive or only slightly lævorotatory.
Refractive index	1.4889.
Aldehydes (principally citral)	94–95 per cent. by absorption with $NaH.SO_3$.

It is soluble in 2½ to 3 volumes of 70 per cent. alcohol, and distils almost entirely between 215° and 230° C. It is practically free from terpenes, but appears to contain traces of other bodies which give it a characteristic odor of its own, in addition to the strong citral odor.—Ibid., May 12, 1906, 738.

Volatile Oil of Balsam of Peru—Yield and Characters.—Haensel obtained from genuine Balsam of Peru (by steam distillation ? Rep.) 30 per cent. of volatile oil of a dark-yellow color, slightly dextrogyre, and having the sp. gr. 1.083 at 15° C. The cinnamein-content of the balsam from which the oil is obtained was determined to be 84.4 per cent.—Pharm. Ztg., li, No. 28 (1906), 323.

Bay Oil—Coarse Adulteration.—Pure bay oil has a sp. gr. 0.965 to 0.985, and a phenol content of 59 to 65 per cent. The extent to which essential oils are still adulterated is shown by a recent examination of a bay oil by the chemists of Schimmel & Co., who found the sample to have the sp. gr., 0.8857, optical rotation, — 3° 18′, and a phenol content of 15.5 per cent. It did not make a clear solution with 10 volumes of 80 per cent. alcohol, and, although at first forming a clear solution with 90 per cent. alcohol, it became cloudy on addition of 0.8 volumes or more.—Schimmel's Report, October–November, 1905, 13.

Bergamot Oil—Detection of Adulterants by Fractionation.—G. Romeo and G. Morica, in a treatise on the method of production of bergamot oil, its physical constants, and the adulterants which come chiefly under consideration, describe in detail the examinations made to ascertain the influence of an adulteration with the oils of turpentine and lemon on the rotatory power of oil of bergamot. The authors reject the method published by Soldairis and Berté, which consists of distilling off one-third of the oil, and determining the rotation in this fraction and in the residue. Instead, they recommend that from 30 Cc. of bergamot oil, fractions of 5 Cc. each be distilled off, and the rotations be determined, especially in the two first fractions. In the case of pure oils the rotation of the first fraction is larger than that of the second; with adulterated oils the reverse is the case.—Schimmel's Rep., October–November, 1905, 26.

Oil of Birch-Buds—Physical Constants.—Schimmel & Co. have determined the following constants in a birch-bud oil distilled by them some time ago: Sp. gr. at 15° C., 0.9755: optical rotation, —6°14′; acid number, 1.6; ester number, 73.4; acetylation number, 170.5. These figures correspond to an ester content of 34.35 per cent. acetate of a sesquiterpene alcohol, $C_{15}H_{24}O$, or to a content of free sesquiterpene alcohol of 41.10 per cent. The oil had a golden-yellow color, and dissolved in 1 vol. of 80 per cent. alcohol. In a larger quantity of 70 per cent. alcohol, a separation of crystals of paraffin took place.—Schimmel's Rep., October-November, 1905, 14.

Oil of Cardamine Amara—Constituents.—According to K. Feist the volatile oil of *Cardamine amara* L., a plant frequently confounded with the true water-cress (*Nasturtium officinale* R. Br.), obtained by steam distillation from the pulverized fresh herb which had not yet blossomed, forms a brown liquid, with a pronounced odor of water-cress. By the action of alcoholic ammonia a thiourea was obtained from this oil, whose melting-point (134° to 135° C.) and the sulphur content (mean, 24.23 per cent.) correspond to those of the thiourea obtained from secondary butyl isothiocyanate, and, as might accordingly be expected, showed a feeble dextrorotation. The content of this secondary butyl isothiocyanate in the fresh herb is given by Feist as 0.0357 per cent. Genuine water-cress, as is well-known, contains phenylethylisothiocyanate.—Schimmel's Rep., April–May, 1906, 15; from Apoth. Ztg., *20* (1905), 832.

Oil of Carline Thistle—Characters and Constituents.—Semmler, in continuation of previous studies on the composition of the oil of Carline thistle (*Carline acaulis* L.) which he commenced in 1889, finds the sp. gr. at 19° C. to be 1.0333, and the refraction n_D 1.56960. He isolated from it 12 to 15 per cent. of cadinene, a monocyclic sesquiterpene $C_{15}H_{24}$, of the boiling point 139° to 141° C. at 20 Mm. pressure. From the high boiling portions of the oil, palmitic acid (m. p. 62° C.) was separated. The principal constituent of the oil is *carlina oxide*, $C_{13}H_{10}O$, boiling at 167° to 168° C. at 20 Mm. pressure, and having a sp. gr. at 17° C. of 1.066. On oxidation with potassium permanganate this body yielded large quantities of benzoic acid, and reduction with sodium and alcohol led to the tetrahydro compound $C_{13}H_{14}O$.—Schimmel's Rep., April–May, 1906, 15; from Berl. Berichte., *39* (1906), 726.

Cedar Wood Oil—Characters of a Product from Hayti.—Schimmel &

Co., describe a cedar wood oil, obtained by distillation in a yield of 4.33 per cent. from Haytian cedar wood, of undetermined origin except that it was derived from a conifer. The oil had a lemon-yellow color and the odor of the common cedar wood oil obtained from *Juniperus virginiana* L., but differs from the latter by its higher specific gravity (0.9612 at 15° C.), lower rotation (a_D — 14° 58′), and higher content of alcoholic constituents (ester number after acetylation 64.0). The acid number was 2.7, the ester number 5.0; solubility, incomplete in 10 vol. of 90 per cent. alcohol, but dissolved in all proportions of 95 per cent. alcohol.—Schimmel's Rep., April–May, 1905, 17.

Cedrelawood Oil (?)—Constants of Recently Distilled Samples.—From two samples of "cedar wood" of whose derivation and origin Schimmel & Co. were unable to ascertain anything definite, volatile oils were distilled which differ from common cedar wood oil by their low specific gravity and their dextrorotation. The microscopical examination showed that the wood was in neither case derived from a conifer, but was probably derived from a cedrela species. The oils also resembled an oil previously distilled by them from Cuban cedrelawood, and showed the following constants respectively: sp. gr., 0.9134 and 0.9131; optical rotation, + 15° 50′ and + 13° 55′; ester number, 0.8 and 0.2; ester number after acetylation, 18.7 and 16.7. Both oils were soluble in 6 to 6.5 and more volumes of 95 per cent. alcohol, but not soluble in 10 volumes of 90 per cent. alcohol. —Schimmel's Rep., October–November, 1905, 17.

Ceylon Citronella and Lemongrass Oils—Characters and Quality.—C. Edward Sage reports the results of an examination of citronella and lemongrass oils which were distilled, at the instigation of the Ceylon Government, at the Government Experiment Station at Peradeniya. The

Citronella Oil was of a dark orange color, and judged by its odor alone it would find a ready market. On submission to analysis it yielded the following factors:

Specific gravity @ 15.5° C	0.884.
Optical rotation	—3.3.
Citronellal	36 per cent.
Geraniol	41 per cent.
Schimmel's test	Turbid solution.

The oil was fractionated under reduced pressure, and the fractions and residue were proved to be free from mineral oils and fatty matter. As the citronella oils sold on the London market are usually guaranteed to pass "Schimmel's test," and all the largest buyers in this country and America specify that test in their contracts, this individual oil would be unlikely to find a purchaser who would not demur, or ask for an allowance, on account of the turbidity mentioned above. As this difficulty has been noticed before with other genuine oils, the retaining of Schimmel's test as a criterion of purity, by buyers and sellers, seems undesirable. The

Lemongrass Oil possessed an exceptionally fine odor, but was dark in color. Analysis yielded the following factors:

Specific gravity @ 15.5° C	0.899.
Aldehyde contents (citral)	66.5 per cent.
Optical rotation	—0.2.

The oil would not yield a clear solution with 70, 80, or 90 per cent. alcohol when one part was mixed with varying quantities of the alcohol up to ten parts, but it made a clear mixture with an equal volume of absolute alcohol, which became very turbid on the addition of more of the same solvent. As so much lemongrass oil is judged by its solubility in 70 per cent. alcohol, it seemed desirable to test for the presence of paraffin and fixed oils; but fractional distillation *in vacuo* did not yield any fraction or residue which could be considered abnormal.—Chem. & Drug., March 3, 1906, 355.

Citronella Oil—New Adulterants.—Schimmel & Co. note that, judging from recent examinations in their laboratory, the coarser adulterations of citronella oils with petroleum are now discontinued in Ceylon; at least, they have no longer been compelled to reject oils on account of deficient solubility in 80 per cent. alcohol (Schimmel's test). On the other hand, there was a large number of oils which did not pass Schimmel's "raised" test, which requires that citronella oil, after 5 per cent. of Russian petroleum is added, shall show nearly the same solubility (1 vol. in 10 vol. 80 per cent. alcohol) as the pure oil. Such oils were almost uniformly found to be inferior in geraniol content, down to 51.6 per cent. Other and worse adulterations consisted, in one sample, of alcohol (11.2 per cent.), in another, of a large percentage of lemon-oil terpenes. Normal Ceylon citronella oil should contain at least 57 per cent. of geraniol.—Schimmel's Rep., October–November, 1905, 19.

Copal Oils—Characters.—L. Schmölling has studied the characters of the volatile oils obtained by ordinary distillation from the two principal varies of copal employed in the manufacture of varnishes, known as Kauri and Manila Copal respectively.

Oil of Kauri Copal is mobile, bright-yellow, has a pleasant aromatic odor and does not change on exposure to the air; sp. gr., 0.8677 at 15° C.; acid number, 3.0; saponification number, 4.9; iodine number, 288.9; soluble in all solvents, except petroleum ether. On distillation the bulk of the oil passes over between 150° and 160°. It contains an abundance of pinene and also some limonene-like bodies.

Oil of Manila Copal distils over as a pink liquid, readily changing to cherry-red on exposure to the air; sp. gr., 0.9069 at 15° C.; acid number, 28.3; saponification number, 45.7; iodine number, 230.4. Solubilities, the same as kauri copal oil, but differs from the latter in yielding on fractionation only 20 per cent. up to 160° C., about 30 per cent. from 160° to 185°, and about 34 per cent. above 250°. No derivatives of either pinene or limonene were obtainable from this oil. The distillation water is rich in acids, of which up to the present formic and acetic acid have been detected.—Schimmel's Rep., April–May, 1906, 23; from Chem. Ztg., *29*, 1905, 955.

Eucalyptus Oil—Examination of a Sample which had Caused Death in Overdose.—A case of poisoning by an overdose of eucalyptus oil, which occurred at Derby in December, 1905, induced F. A. Upsher Smith to make a chemical examination of a portion of the identical oil, with the particular object of determining whether it was composed chiefly of cineol or of phellandrene. The oil was pale yellow, had a sp. gr. at 15.5° C. of 0.919, an opitical rotation in 100 Mm. tube +4.47° C., contained 52.65 per cent. of cineol, but no phellandrene. The oil was, therefore, an excellent sample of the cineol class, and complied in every way with the official (B. P.) requirement. The relative therapeutic values of the two classes of eucalyptus oil, known respectively as cineol oils and phellandrene oils, is not at present precisely known, but it is an interesting fact that the British Pharmacopœia now gives preference to the former class of oil, as typified by *Eucalyptus globulus*, whereas, until 1898, the phellandrene oil, from *E. amygdalina*, whereby the therapeutic properties of eucalyptus were first established in Australia, was the official oil.—Pharm. Journ., June 2, 1906, 662.

Geranium Oil—Enormous Production at Réunion.—Schimmel & Co. publish the statistics of importation in the port of Marseilles from the island of Réunion, from which it appears that the enormous quantity of 28,000 kilos of geranium oil has arrived within eight months. This, in competition with Algerian oil of geranium, and the low prices which have ruled for the Indian product, palmarosa oil, has contributed largely to the depression of prices prevailing at the present time. Attention is directed in this connection to several adulterations of geranium oils, which consisted evidently of benzoic acid esters, added for the purpose of raising the apparent geranyl-tigliate content of the oils. Two samples of geranium oils, so adulterated, are described in Schimmel's Rep., October-November, 1905, 35–36.

Ginger Oil—Cineol, Citral and Borneol as Constituents.—The only constituents of ginger oil known up to the present were the hydrocarbons camphene, phellandrene and zingiberene. The chemists of Schimmel & Co. have now also determined some oxygenated constituents which are not unimportant for the aroma of the oil, namely, *cineol*, *citral* and *borneol*, possibly also *geraniol*. The ginger oil examined had been distilled from African ginger, and gave the following constituents: Sp. gr. 0.8853; a_D —42°46′; n_D 20° 1.49262; saponification number, 6.2; saponification number after acetylation, 42. The latter is equal to 9.8 per cent. of free alcohol of the formula $C_{10}H_{18}O$. The oil distilled *in vacuo* at 5 Mm. between 40° and 125° C.—Schimmel's Rep., October–November, 1905, 38–39.

Ginger Grass Oil—Commercial Variation, Characters, Etc.—Walbaum and Huethig find that the characters of commercial ginger-grass oil, the botanical source of which has not yet been determined, are very variable. The specific gravity ranges from 0.9277 to 0.9458; a_D from — 29° 25′ to + 22° 40′; acid value from 0.90 to 3.20; acetyl value from 130 to 172. The first fractions obtained from the oil distilled under 5–6 Mm. pressure contain a-dextrophellandrene, dipentene, and limonene. Between 80°–90° C. an aldehyde, $C_{10}H_{16}O$, with an odor recalling that of citronella and heptyl aldehyde. It distils at 221°–224° and 754 Mm., and has the sp. gr. 0.9351 at 15° C. On oxidation it gives an acid, $C_{10}H_{16}O_2$, and, by hydrogenation, the alcohol $C_{10}H_{18}O$, which is a colorless liquid with a fruity odor; b. p. 98–102° under 4 Mm. The oil also contains inactive carvone, geraniol, and dihydrocuminal alcohol, $C_{10}H_{16}O$.—Pharm. Journ., Aug. 26, 1905, 279; from Journ. f. Prakt. Chem., 1905, *71*, 459.

Volatile Oil of Hips—Yield and Characters.—H. Hänsel has obtained by the distillation of dried hips (from *Rosa canina* L.) deprived of the seeds, 0.038 per cent. of a liquid volatile oil, having an intense odor of the hips (Hagebutten), and an acid reaction. It is soluble in 30 parts of absolute alcohol.—Pharm. Ztg., li, No. 28 (1906), 323.

Lavender Oil—Distillation Under Conditions Securing a High Ester Content.—Schimmel & Co., having established works for the distillation of lavender oil at Barrême in the department of the Basses-Alpes, situated at an elevation of 2,300 feet, have succeeded in so conducting the process of distillation as to produce oils of considerably higher ester-content than those at present met with in commerce (30 to 40 per cent. linalyl acetate). The oils distilled this season showed an ester-content fluctuating between 47 and 52 per cent., the average of the oils obtained being 50 per cent. The results refute the opinion of a French firm of oil distillers that lavender oil of such a high natural ester-content does not exist. The chemists of Schimmel & Co. have also obtained and described the

Oil of Lavandula Stoechas.—The dried blossoms gave a yield of 0.755 per cent. of a yellow-brown oil, having a strong camphor-like odor, and showing the following constants: Specific gravity, 0.9620; a_D, +35°30′; n_D, 1.47909; acid number, 5.16; ester number, 13.1; solubility, in two or more volumes of 70 per cent. alcohol. The dilute solution is opalescent in consequence of a separation of paraffin. A dextrorotatory camphor, m. p. 175° to 175.5° C., was separated from the oil, its oxime melting at

117° to 118° C., and showing a rotation in alcoholic solution of —41.6 C., and the semicarbazone melting at 231° C.—Schimmel's Rep., October–November, 1905, 40–42.

Lemongrass Oil—Adulteration with Cacao Butter.—Two samples of lemongrass oil recently submitted to Schimmel & Co. for approval were found on examination to behave abnormally, and proved to be more or less adulterated with cacao butter. This was determined by the melting-point and saponification number of the residue remaining when the oils were subjected to steam distillation.—Schimmel's Rep., October–November, 1905, 44.

Lemon Petit-Grain Oil—Characters.—The fragrant volatile oil obtained by distilling the leaves and twigs of the lemon tree, *Citrus limonum*, was found by G. Litterer to have the following characters: Specific gravity, at 15° C.; 0.8824; $[\alpha]_D + 21^\circ 08'$; n_D 23° 1.4725. It contained 24 per cent. of citral, 19.4 per cent. of total alcohols, 8.2 per cent, combined as esters, the rest free; these alcohols consisted of geraniol and probably dextro-linalol, with some limonene and camphene.—Pharm. Journ., Feb. 17, 1906, 167; from Bull. Soc. Chim., 1905, *33*, 1081.

Linaloe Oils—Linalol Content.—In books of reference on essential oils linaloe oil is described as consisting almost entirely of an alcohol, linalol boiling at 198° to 199° C. Charabot states that it contains at least 90 per cent. of linalol. E. J. Parry and C. T. Bennett, however, observe that an oil containing such a high percentage of linalol must have been a somewhat abnormal one, as the great majority of samples to-day of the finest oil imported, and believed to be above suspicion, do not contain more than 70 per cent. of linalol. This may be due to the abstraction of linalol for conversion into the acetic ester, the latter being temporarily used to raise the ester value of lavender and bergamot oils, especially while these oils have been so dear. The authors have examined a number of samples obtained from the most trustworthy sources, and consider that the following figures fairly represent the best class of linaloe oil now obtainable. The following table gives the general characters of a few of these samples:

	1	2	3	4	5	6
Sp. gr. at 15°	0.882	0.884	0.882	0.882	0.877	0.879
Optical rotation	—13°	—11°	—11°	—10°	—11°30′	—12°10′
Esters	11.2 p.c.	5.8 p. c.	——	5.5 p. c.	5.8 p. c.	5.5 p. c.
Linalol	57 p. c.	56.2 p. c.	——	63 p. c.	66 p. c.	65.5 p. c.

—Chem. & Drugg., April 7, 1906, 544.

Liverwort Oils—Source, Yield and Characters.—K. Müller has prepared the volatile oils from a number of "liverworts," and describes them as follows:

Oil of Alicularia Scalaris (Corda), obtained by distillation, is lemon-yellow in color and has a pleasant odor; sp. gr. at 15°, 0.965; optical rotation, —33.49°. Its empirical formula is $C_{15}H_{26}O$.

Oil of Leiocyphus Taylori. The powdered liverwort, dried at 100°, gave on prolonged steam distillation 1.6 per cent. of a viscid bluish-green oil, with a powerful, peculiar and very persistent odor and a very nauseous taste; sp. gr. at 20° C., 0.978 to 0.986; $[a]_D - 3.44°$; on fractionation it is found to contain a sesquiterpene alcohol, $C_{15}H_{26}O$, and a terpene, $C_{15}H_{24}$; a fraction boiling between 280–290° was deep blue, and had the formula $C_{15}H_{26}O$.

Oil of Madotheca Levigata (Schrad). The dried liverwort yielded 0.9 per cent. of orange-yellow fluid essential oil with a pleasant odor; sp. gr., 0.856; $[a]_D + 72.74$. The chief constituent was an alcohol of the general formula $C_{10}H_{18}O$.

Oil of Mastigobryum Trilobatum. The dried liverwort yields 0.93 per cent. of an orange-yellow oil with a combined odor of pine, sandal and cedar; sp. gr., 0.945 to 0.947; $[a]_D + 12.88°$ to $+ 14.15°$; only a trace of a resinoid body was removed by shaking out with sodium bisulphite; no appreciable quantity of free acid, nitrogen or sulphur was detected. Saponification number, 5.4; the acids liberated contained one which formed a semi-solid mass at 16° C.; no volatile fatty acids were detected. By fractional distillation at normal pressure a small quantity of yellow oil passed over between 50°–240° C.; the bulk distilled between 260°–270° C.; this had a bluish-green color, and the sp. gr. 0.946 at 20° C.; $[a]_D + 25.59°$. The last fraction distilled between 270°–285° C.—Pharm. Journ., Jan. 13 and 20, 1906, 35 and 65; from Zeitschr. f. Physiol. Chem., 1905, *45*, 299.

Volatile Oil of Musk.—Method of preparation and odorous constituent. See *Musk* under "Materia Medica."

Myrtle Oil—A New Alcohol Constituent.—H. v. Soden and Fr. Elze have discovered a new alcohol in the higher boiling portions of myrtle oil, having the formula $C_{10}H_{18}O$, which they have designated

Myrtenol. It occurs in the oil chiefly as acetic ester, and was obtained by saponification of the ester fraction with alcoholic solution of potassium hydroxide, and separated from its admixture with other alcohols, for example geraniol, by conversion into the phthalic acid ester, which melts at 116° C. From this phthalic acid ester the new alcohol is obtained as a viscid, colorless oil, having the odor of myrtle; boiling-point, 220° to 221° C. (751 Mm. pressure), 79.5° to 80° C. (3.5 Mm. pressure); sp. gr., 0.986 at 15° C., a_D, $+ 49° 25'$. Myrtenol can be acetylized quantitatively, and appears to be a primary cyclic terpene alcohol.—Schimmel's Rep., April–May, 1906, 47; from Chem. Ztg., *29*, 1905, 1031.

Oil of Ocotea Usambarensis—A New East African Product.—R. Schmidt and K. Weilinger have examined a new volatile oil obtained in a yield of 0.15 per cent. from the bark of *Ocotea usambarensis* Engl., a tree which belong to the Lauraceæ and which is found in fairly large numbers in the primeval forests of German East Africa. The oil had the following properties: b. p., 50° to 160° C. at 10 Mm. pressure; sp. gr., 0.913, at 20° C.; $(n)_D$, 1.476; $(a)_D$ at 20°, —11° 12′; acid number, 1.2; ester number, 12.5; content of free alcohols ($C_{10}H_{18}O$), 4.5 per cent.; free from sulphur and nitrogen. It contained besides 1 per cent. of myristinic aldehyde and a very small quantity of a ketone, 40 per cent. of cineol, 40 per cent. of l-terpineol, and 10 per cent. of a sesquisterpene, $C_{15}H_{24}$, whose dihydrochloride is not identical with cadinene hydrochloride.—Schimmel's Rep., April–May, 1906, 68; from Berl. Berichte, *39* (1906), 652.

Mandarin Orange Oil—Yield, Characters and Constants.—Dr. E. Berté and S. Gulli describe mandarin (orange) oil as a golden-yellow liquid of an exceedingly fine and very pleasant flavor, and having a characteristic slight bluish fluorescence, which becomes more prominent when diluted with alcohol. Like the common oils which are expressed in Sicily and in the district of Reggio, Calabria, mandarin oil is also obtained by hand pressure with a thin sponge from the slight and green peel of the pleasant tasting fruit of *Citrus madurensis*, *Citrus deliciosa* or *Citrus bigaradia sinensis*, known as mandarins. Owing to the demand for the ripe fruit for eating, however, and the small yield of oil—1,000 mandarins giving an average of about 400 Gm. of oil—the supply of mandarin orange oil is limited; it is therefore rather rare on the market, brings a high price, and is subject to many adulterations. The pure oil has the following constants: Sp. gr., from 0.854 to 0.858 at 15° C.; optical rotation, from + 67° 00′ to + 73° 00′; boiling-point, from 171° to 175° C. The oil is composed for the greater part of d-limonene; it contains also a small amount of citral (about 1 per cent.), and of the methyl ester of anthranilic acid, to which is due the characteristic flavor and its bluish fluorescence, and, according to the chemists of Schimmel & Co., the oil also contains a small quantity of dipentene, decylic, and nonylic aldehydes, linalool, and terpineol. The authors publish two tables exhibiting the constants obtained with 9 samples of the pure oil and 11 samples of oil known to be adulterated, from which it appears that it is quite practicable to detect the adulterations of the genuine oil by the process of Soldaini and Berté, depending on fractional distillation.—Chem. & Drug., Sept. 9, 1905, 445.

Sweet Orange Petit-Grain Oil—Composition.—G. Litterer gives the composition of the essential oil of the leaves and twigs of *Citrus aurantium* as follows: Sp. gr. 0.8603 at 15° C; optical rotation, +56°46′. It contained

4 per cent. citral, much less lævo-camphene, less limonene, 20 per cent of total alcohols, among which geraniol was isolated, and dextro-linalol was probably present.—Pharm. Journ., Feb. 3, 1906, 109; from Bull. Soc. Chim., 1905, 1079.

Patchouli Oils—Characters of the Product of Different Varieties.—A. W. K. de Jong has studied the properties of the volatile oils distilled from the varieties of patchouli grown in the Botanical Garden of Buitenzorg, where they are distintinguished as follows: I. *Patchouli fleurissant* (*Pogostemon Heyneanus* Bth.?). II. *Patchouli de Singapore* (*Pogostemon tomentosus* Hassk.?); and III. *Patchouli de Java* (a variety of *Pogostemon tomentosus* Hassk.?). The principal characters of distinction are exhibited in the following table:

Variety of oil.	I.	II.	III.
Specific gravity at 25° C.	0.922	0.949	0.929
Optical rotation —$(a)_D$ 25°	—16° 10′	—51.24	? 42° 48′ *
Solubility in 90 per cent. alcohol	10 vol.	6 vol.	0.75 vol.
Distillation at 740 Mm. to 250° C.	17 per cent.	2 per cent.	10 per cent.
Distillation at 250° to 270° C.	50 per cent.	60 per cent.	70 per cent.
Distillation at 270° to 280° C.	16 per cent.	20 per cent.	8 per cent.
Distillation at 280° to 300° C.	10 per cent.	10 per cent.	6 per cent.

The oils II and III contained Gladstone's azulene. The action of concentrated sulphuric acid left unchanged 17 per cent. of I, 22 per cent. of II and 20 per cent. of III, from which, by distillation, a sesquiterpene was obtained. This sesquiterpene, for which the author proposes the name "dilemene," has the boiling-point 260° to 263° at 740 Mm. pressure, and is considered possibly identical with the sesquiterpene discovered by Von Soden and Rojahn (see Proceedings 1905, 770) in patchouli oil, having the boiling-point 273° to 274° at 760 Mm. pressure.—Schimmel's Rep., April–May, 1906, 49; from Recueil des Trav. Chim. des P.-B., *24* (1905), 309–312, through Chem. Centralbl., 1905, ii, 1180.

Patchouli Oil—Production in Java and the Straits.—According to P. Serre the patchouli plants cultivated in Java and the Straits Settlements originate from Pogostemon patchouli. When fully developed they reach a height of 2 to 3 feet, but the harvest of the leaves (which are sent to Europe in a well-dried state) commences as soon as the plants are 6 inches high, and every six months the leaves are stripped again. The yield of oil produced in the factories of these countries, owing to the defective distilling apparatus, is quite small. The yellow-green oil is very thick and separates crystals of patchouli alcohol. With the plants imported in Java, good results have been obtained up to an elevation of 1,600 feet, but in the author's opinion the oil obtained is inferior to that produced in the Malay Peninsula.—Schimmel's Rep., April–May, 1906, 50; from Journ. d'Agriculture tropicale *5* (1905), 369.

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* The sign noting the direction of the rotation is not mentioned.

Patchouli Oil—Improvement in Quality by Age.—J. Rodie points out the difficuties met with in valuing the patchouli oils of commerce, and calls attention to the fact that patchouli oil in the course of time undergoes a considerable change in its properties; its solubility in 80 per cent. alcohol increases, the odor improves, and it thus becomes more valuable for purposes of perfumery. He was able to observe these changes in three different absolutely pure oils, of which one was 11, another 6, and a third 1 year old.—Schimmel's Rep., October–November, 1905, 52; from Chem. Ztg., *29* (1905), 92.

Peppermint Oil—Production, etc.—In a monograph prepared for the U. S. Department of Agriculture, Alice Henkel gives a highly interesting description of the production of peppermint oil, the botanical sources of the material from which it is prepared, the countries where grown, its cultivation—curing methods, conditions injurious to crop, harvesting, distillation, description of stills, etc. The chapter devoted to the consideration of peppermint cultivation in the United States is of particular interest, since it clearly shows how and with what degree of success a monopoly in the production and sale of peppermint oil was created in 1844, for a period of five years—a period sufficient to enrich the New York monopolists, and to destroy the industry which had been successfully inaugurated in Ohio. —West. Drugg., March, 1906, 130–134.

Oil of Piper Volkensii—Properties and Constituents.—R. Schmidt and K. Weilinger describe a new volatile oil obtained in a yield of 0.3 per cent. from the leaves of *Piper Volkensii*, C. D. C., a plant found in considerable numbers in the damp forests of Usambara, German East Africa. The oil is bright-brown in color, has a powerful pleasant odor, and the following properties: B. p., 90° to 175° C. at 12 Mm. pressure; sp. gr. at 20°, 0.934; $(n)_D$, 1.5017; $(a)_D$, —8° 24′; ester content, 6 per cent. geranyl acetate; free alcohols, 14 per cent. $C_{10}H_{18}O$. The principal fraction (70 per cent.) of the saponified oil boiled at 135° to 148° C., at 15 Mm. pressure. This fraction probably contained a methoxylized safrol, and contains also the sesquiterpene limene found by Burgess and Page in oil of limette. Among the alcohols, 4 per cent. of a primary alcohol, possibly citronellol, was abstracted.—Schimmel's Rep., April–May, 1906, 68; from Berl. Berichte., *39* (1906), 652.

Rosemary Oil—Variety from Tunis.—Schimmel & Co. mention that a rosemary oil imported from Tunis differs somewhat in its properties from ordinary rosemary oil, and may therefore possibly not be considered a competing product of equal value to the French oil. The differences are probably due to the fact that for the production of this oil not only *Rosmarinus* *officinalis*, L., but also other plants have been used. The product under discussion was a clear, colorless distillate, having an odor resembling oil of rosemary, but reminding of oil of spike, and exhibited the following constants: Sp. gr., 0.9171; a_D, + 2° 17′; a_D of the first 10 per cent. of the distillate, — 2° 24′; solubility, in 1 or more vol. of 80 per cent. alcohol.—Schimmel's Rep., October–November, 1905, 61.

Spanish Rosemary Oil—Cause of Lævorotatory Action.—It has been observed for some time past that the rosemary oil of Spanish origin is frequently lævorotatory, and it is assumed that this is due to adulteration. E. J. Parry and C. T. Bennett have conducted examinations of oils distilled in England from authentic specimens of rosemary herb grown in Spain and France respectively, which prove beyond doubt that a lævorotatory oil is consistent with purity, and also a dextrorotatory oil giving lævorotatory fractions. It appears that it is customary in France to distil the oil from the herb which has been collected after the flowering period (February and March) and dried for about eight days in the sun. In Spain the distillation goes on all the year round, and some variation is therefore to be expected. Both fresh and dried herbs are employed, the latter when the supply is greater than the capacity of the stills and when it has to be carried from a long distance. In the dry state the leaves can be readily separated from the stalks by threshing, but in the fresh condition it is impossible so to separate them. The yield from the fresh herb is from 0.4 to 0.75 per cent., while the dried leaves yield about 1 per cent. of oil which is of finer quality than that from the fresh herb. The characters of three typical samples were as follows:

	1. (Spanish).	2. (French).	3. (French.)
Source	Leaves alone.	Leaves and Stalks.	Leaves alone.
Specific gravity	0.917	0.897	0.914
Optical rotation	+5°30′	—8°30′	—3°
Esters calclated as bornyl acetate	3.2 per cent.	3.0 per cent.	3.6 per cent.
Total borneol	19.7 per cent.	10.9 per cont.	18.5 per cent.
Optical rotation of first 10 per cent. (100 Mm.)	—1°	—12°30′	—10°

The stalks alone yielded very little on distillation, showing that they contain a much smaller percentage of oil and that of little odor-value. The results show that the lævorototary constituent (lævopinene) occurs in greater proportion when the stalks are included, and that an inferior oil is then obtained. It is evident that oils derived from carefully picked leaves yield fractions which are lævogyrate. Fractionations make it clear that the borneol is derived principally if not entirely from the leaves, and a genuine lævorotatory oil containing a comparatively low percentage of borneol may be assumed to have been distilled from both leaves and stalks, since the leaves alone yield an oil which has a finer odor and higher borneol-content.—Chem. & Drug., April 28, 1906, 671.

Volatile Oil of Ruta Hortensis—Yield and Characters.—H. Haensel obtained from the dried herb of *Ruta hortensis* 0.135 per cent. of a faintly greenish-yellow volatile oil which was soluble in about 9 parts of 80 per cent. alcohol. It is not identical with the volatile oil of *Ruta graveolens.*—Pharm. Ztg., li, No. 28 (1906), 323.

Oil of Broad-Leaved Sage—Characters and Constituents.—O. Wallach has examined the volatile oil of the broad-leaved sage (*Salvia grandiflora*?). It had the sp. gr., 0.9084, the optical rotation —10.06°, and contained lævokinene, cineol, lævocamphor, and a body like phellandrene, which gave a compound with nitrous acid melting at 85° to 86° C. It contains no thujone.—Pharm. Journ., Jan. 20, 1906, 65; from Chem. Centralbl., 1905, *2*, 674.

Sage Oils—Characters and Constants of Two Sorts.—Schimmel & Co. describe two sage oils which have recently been examined by their chemists. The one, distilled from the fresh blossoms and stems of *Salvia sclerea*, L., grown in Miltitz, designated as

Oil of Muscatel Sage, was obtained in a yield of 0.117 per. cent. It was of a bright olive-green color, had a peculiar odor, and showed the following constants: Sp. gr., 0.9209; a_D, — 23° 38′; n_D 20°, 1.47724; acid number, 0.9; ester number 153.0; ester number after acetylation, 154.9; solubility, in 1.5 vol. 80 per cent. alcohol with slight opalescence, and separation of paraffin when more solvent is added; clear at first with 90 per cent. alcohol, separating paraffin when about 3 volumes more are added. The second oil, may be designated as

Mount Carmel Sage Oil, was distilled from plants grown on Mount Carmel, Palestine. The botanical origin is unfortunately not known, but it resembles in its properties the oil free from thujone recently examined by Wallach. Its quantity was insufficient for a complete examination. It was water-white, had a camphor-like odor, and gave the following constants: Sp. gr., 0.9175; a_D, —9° 35′; n_D 20°, 1.46734; ester number, 7.3; forms no clear solution in 10 vol. of 70 per cent. alcohol, but is soluble in 1 or more vol. of 80 per cent. alcohol.—Schimmel's Rep., October-November, 1905, 62.

Sandalwood Oil—Constants of the East India Variety.—Having previously, on the strength of the behavior of their own distillates, specified that East Indian sandalwood oil must have a rotatory power of at least —17°, Schimmel & Co. now find it necessary to recede from their original specification and admit that slight deviations from this standard are permissible. They have recently obtained from 22,500 kilos of sandalwood a distillate which had a slightly lower rotation and possessed the following properties: Specific gravity, 0.9794; a_D, —16° 30′; acid number, 3.5; ester number, 17.4 (= 6.8 per cent. of santalol); ester number after acetylation, 199.4 (= 92.1 per cent., $C_{15}H_{24}O$); solubility, in about 4.5 vol. of 70 per cent. alcohol with slight opalescence, which soon disappears when more solvent is added.—Schimmel's Rep., October–November, 1905, 64.

Sandalwood Oil—Method of Determination.—Charles E. Vanderkleed calls attention to two errors in the method for the determination of santalol as given in the English translation of Gildemeister & Hoffman's "Volatile Oils." In the formula for the calculation, the factor 0.42 should be 0.042, and normal alcoholic potash solution should be used for the saponification, instead of aqueous potash. The author also calls attention to an improvement over the method of washing the acetylized oil with water and soda, which, as proposed by Wielen in "Chemiker Zeitung," consists in substituting 10 per cent. sodium chloride solution for the water. Not only is much time saved on account of the quickness with which the oil separates from the heavier aqueous layer, but an accurate assay can be made using only 5 Cc. of the sandalwood oil instead of 20 Cc. as directed by the method in "Volatile Oils," there being almost no loss of oil at all by emulsification.—Proc. Pa. Pharm. Assoc., 1905, 193.

Sandal Oil—Sophisticated Oil of German Origin in the English Market.—Ernest J. Parry has subjected a sandal oil which has for some time reached the English market from Germany and was sold at suspiciously low prices, to chemical examination, and obtained results which leave no doubt that this oil is West Indian sandalwood oil, manipulated by fractionation to render it soluble and to give it a higher santalol value than the normal oil. The special sample of oil had the following characters: Specific gravity at 15° C., 0.970; optical rotation (100 Mm.), — 14°; it was soluble in 5 volumes of 70 per cent. alcohol; apparent santalol value (free), 93.5 per cent.; combined santalol, 3.5 per cent. By repeated fractionation under reduced pressure, a small amount (about 5 per cent.) was obtained which boiled at 220° C. at ordinary pressure, with slight decomposition. The specific gravity was 0.943, and the refractive index at 20° C., 1.4832. The odor of this oil (of which only 8 Cc. was obtained) left no doubt as to its being terpineol. A very small yield of crystalline nitrosochloride was obtained by Wallach's method, which melted at 115° C., this being sufficiently near 113° C. to confirm the identity of the body, although not quite pure.—Chem. and Drugg., Febr. 3, 1906, 211.

In a further communication Mr. Parry calls attention to the observation that hundreds of thousands of

Sandalwood Oil Capsules are being manufactured in London, which are being sold at prices which are absolutely inconsistent with the use of pure sandalwood oil. He has examined two samples in which the oil was found to have the following characters:

	1	2
Specific gravity	0.963	0.964
Optical rotation	+4°	+7°
Solubility in 70 per cent. alcohol	Not in 10 volumes.	Not in 10 volumes.
Santalol value	77 per cent.	78 per cent.

The capsules obviously contain a large proportion of West Indian sandalwood oil.—Ibid., June 22, 1906, 951.

Sassafras Oil—Solubility.—Although sassafras oil is required to be soluble in every proportion in 90 per cent. alcohol, Schimmel & Co. have, repeatedly handled oils obtained from a reliable source, which showed a slightly lower solubility. They have now distilled the oil from the root-bark of sassafras officinale Nees, in order to test the correctness of the generally-accepted requirement, and found, in agreement with their observations made on good commercial oils, that 1 to 2 vol. 90 per cent. alcohol are necessary to dissolve 1 vol. sassafras oil. Their results do not, however, dispute that there are sassafras oils which are soluble in every proportion in 90 per cent. alcohol. The oil under consideration was bright yellow and obtained in a yield of 3.25 per cent. sp. gr. 1.075 at 15° C.; $a_D + 2°14'$; ester number, 1.9.—Schimmel's Rep., April–May, 1906, 61.

Star Anise Oil—Yield and Characters from the Leaves.—Ph. Eberhardt has distilled the volatile oil from the leaves of *Illicium verum* and, obtaining 200 drops from 1 Kgm. of the leaves, considers them profitable as an additional source of star-anise oil, since the yield is quite as large as that obtainable from the pericarp of the fruits. The oil of the leaves, it is true, has a lower congealing-point (13° instead of 16° demanded for a good oil of the fruit), but this has its advantages for admixture with the latter, which sometimes has a congealing-point of 18° C. The author recommends that the leaves be gathered for distillation once a year in the middle of the dry season, selecting only the older leaves for distillation.—Pharm. Ztg., li, No. 31 (1906), 352; from Chem. Centralbl., 1906, i, No. 12.

Oil of Wintergreen ("Sweet Birch Bark")—Distillation in North Carolina.—Harold Day Foster gives an interesting description of the production of wintergreen oil, so-called, but in reality oil of sweet birch bark, as practiced in McDowell County, N. C. He says that although oil of wintergreen was formerly obtained from the leaves of the wintergreen or checkerberry (*Gaultheria procumbens*), almost all of the "natural oil" now on the market is obtained from the sweet birch (*Betula lenta*), a tree which, although of wide botanical distribution in the eastern United States, occurs at its best in the southern Appalachian Mountains. The bark alone is used for the distillation of the oil, and it is essential that it be green, for if it is allowed to dry out before distillation it becomes worthless for the production of oil. The bark is stripped from the trunk and stump and the larger limbs, but the twigs and the bark of the smaller branches are not used. The bark is brought to the distillery and put on the floor, around which there is a narrow strip of lumber forming a shallow box. Here it is chipped up fine with axes. Everything about the distillery and the methods of distilling are simple to the point of crudeness. The distillery most commonly consists of a floor on which the bark is chipped, and one or more vats or stills with their condensers, and these are roofed over with a rude framework of poles covered with hemlock bark. This shed serves to protect the birch bark from the drying sun, and the fires from the rain, as well as shielding the workers from the weather. The stills are 3 feet wide by 4 feet long and 3 feet deep. They are constructed of wood with cast-iron bottoms and steam-tight tops or covers. The still is placed in a position on two parallel rows of flat rocks one under each side of the box, leaving a space underneath on which fire is placed. The smoke escapes through a vent or low chimney of flat rock at the rear. Inside the box and about 4 inches above the iron bottom is a grating of wooden strips 4 inches wide and placed about 1 inch apart. Under this grating water is boiled by a fire placed on the ground under the iron bottom, and the chipped bark rests on the grating. The grating thus keeps the bark out of the water and the steam alone, as it rises through the still filled with bark, extracts the oil. The condenser consists simply of a straight iron water-pipe, which is laid in a trough through which the water from a brook is deflected. The distillate of water and oil is collected in a glass jar, the mouth of which is covered with a piece of cloth through which the oil and water is strained. The oil sinks to the bottom of the jar; the smoky water, as it overflows automatically, returns to the still, where it is boiled over again, and at the same time keeps up the necessary supply of water for the distillation.—Pharm. Era, Mar. 1, 1906, 188–189.

ALCOHOLS AND DERIVATIVES.

Pure Absolute Alcohol—Preparation and Specific Gravity.—To obtain a perfectly pure absolute alcohol, W. Winkler recommends the following method: Commercial absolute alcohol is treated with finely-powdered silver oxide (a few grams per liter) during several days; any aldehyde present is thus oxidized to acetic acid, which is neutralized by the addition of 1 or 2 Gm. of potassium hydrate. The water present is thus removed by heating the alcohol during several hours with coarse filings of metallic calcium (20 Gm. per liter) and subsequent distillation. It is thus obtained of a strength of about 99.9 per cent., the last trace of water being removed by careful and final distillation with a few grams (per liter) of calcium filings. The author gives a description of the process in detail, which must be consulted in the original. The specific gravity of absolute alcohol obtained by this process was determined to be 0.79363 at 15° C.—Pharm. Ztg., l, No. 104 (1905), 1095; from Ber. d. Chem. Ges., 1905, 3612.

Alcohol—Sensitive Reaction with Nitric Acid.—J. Kóssa regards the development of the green color, due to the reduction of nitric acid to nitrogen trioxide in the presence of ethyl alcohol, to be sufficiently sensitive to serve for the detection of the latter, and its differentiation from aldehyde, ether, acetone and chloroform, which do not give this reaction. If, for example, a few cubic centimeters of nitric acid, diluted to 50 per cent., are carefully covered in a test-tube with a layer of 90 per cent. alcohol, a white, cloudy layer quickly develops at the point of contact, soon changing to a green ring, which, while effervescing, gradually sinks to the bottom until the green color completely pervades the acid layer, while the odor of aldehyde manifests itself. On shaking the contents of the test-tube the green layer disappears, although the effervescence may continue for hours; but if the test-tube is placed into water at 0° C., when the green ring makes its appearance, effervescence ceases and the ring darkens, finally becoming blue. In the practical application of the test, however, it is not necessary to superimpose the alcohol layer upon the acid layer. The liquid containing alcohol may be mixed with the nitric acid, observing that the latter is in large excess. Thus if 5 Cc. of 50 per cent. nitric acid are mixed with 5 drops of 90 per cent. alcohol at the room temperature (24° C.), a yellow color is developed throughout the liquid after a few minutes. If then the test-tube is immersed in cold water the liquid assumes an intense grass-green color, and this, if cooled to 0° C., becomes dark blue. Indeed, the author finds that a single drop of alcohol is capable of developing the green color under the conditions described, and he therefore believes the reaction to be available for the recognition of ethyl alcohol in place of the iodoform reaction usually relied on for this purpose. Owing to the possible violence of the reaction, concentrated or fuming nitric acid must not be used. Instead of 50 per cent. acid a previously cooled mixture of 1 vol. of saturated solution of potassium nitrate and 4 vols. of concentrated sulphuric acid may be used.—Pharm. Centralh., xlvi, No. 47 (1905), 893.

Denaturated Alcohol—Detection in Galenical Preparations.—In view of the permission by recent act of Congress to manufacture and use tax-free denaturized alcohol, a paper on the proposed method for its detection in galenical preparations for the forthcoming revised edition of the G. P. by E. Schmidt and R. Gaze is particularly interesting at this time. The denaturated alcohol of the G. P. IV., is produced by mixing 5 volumes of methyl alcohol, containing 30 per cent. of acetone, with 100 volumes of alcohol, the mixture thus obtained containing therefore 1.428 per cent. of acetone, the detection of which is considered sufficient evidence of the presence of denaturated alcohol in a preparation. The determination of the presence of methyl alcohol is not considered necessary, and particularly the method of the U. S. P. for its detection, depending on the conversion of methyl alcohol into formaldehyde by means of a glowing copper spiral, is not free from objection. The method for the detection of acetone is that known as Legal's, which depends upon the development of a violet color when a mixture of the suspected alcohol, water and sodium nitroprusside, rendered alkaline with sodium hydroxide, is acidified with diluted acetic acid. In the absence of acetone, the lemon-yellow alkaline solution becomes completely decolorized on acidulation. The authors have applied this method to a number of spirits and tinctures, and find it available in most cases for the absolute determination of acetone, with slight difference in the manipulation dependent on the particular preparation. In the case of some, however, particularly in that of spiritus sinapis, Legal's reaction is not conclusive evidence of the presence of acetone; this, as previously pointed out by one of the authors (S.), being probably due to sulphur compounds introduced by the use of old, strongly colored oil of mustard, or of artificial oil. In such cases the iodoform reaction for acetone is applied in addition to the nitroprusside reaction which, moreover, may with advantage be applied confirmatory to other preparations. The two methods which may be designated as *a* and *b* respectively, are conducted as follows:

a. 2 Cc. of the preparation, or of a distillate obtained under specified directions, are diluted with 20 Cc. of water and 1 Cc. of solution of sodium nitroprusside (1 : 100, freshly prepared) and rendered alkaline with NaOH. On acidification with diluted acetic acid the yellow to red-yellow solution becomes colorless in the absence of acetone, but if this is present a violet color is developed.

b. 5 Cc. of the preparation, or of a distillate, are diluted with 50 Cc. of water, 1 Cc. of solution of iodine (1 p. iodine, 2 p. potassium iodide, 10 p. water) added, and the mixture is made strongly alkaline with ammonia water. If in the course of 10 minutes the brown-black color does not disappear, powdered sodium thiosulphate is added in small quantities until it becomes decolorized. In the absence of acetone a clear, colorless liquid results, but if acetone is present this is evidenced by turbidity and the color of iodoform, the latter separating on standing as a crystalline powder.

By these methods, the following preparations were subjected to tests for acetone, either directly diluted or dilutions of distillates obtained as indicated:

Spiritus Sinapis and *Spiritus Cochleariæ*, in distillates obtained by carefully distilling 10 Cc. from a mixture of 10 Cc. of the preparation and 1

Cc. of 15 per cent. KOH solution, acidulated with H_2SO_4 and 30 Cc. of water.

Spiritus Caeruleus in distillates obtained by carefully distilling 10 Cc. from a mixture of 10 Cc. of the preparation.

Spiritus Saponatus, *Spiritus Saponatus-camphor*, *Spiritus Saponis Kalini*, *Spiritus Angelicæ Comp.*, *Spiritus Russicus*, *Tinctura Aloes*, *Tinctura Arnicæ*, *Tinctura Asafœtidæ*, *Tinctura Benzoini*, *Tinctura Cantharid.*, *Tinctura Catechu*, and *Tinctura Capsici*, in distillates obtained by carefully distilling 10 Cc. from a mixture of 10 Cc. of the preparation and 20 Cc. of water.

Tinctura Myrrhæ, in the distillate obtained by carefully distilling 10 Cc. from 20 Cc. of the *undiluted* preparation.

Spiritus Camphoratus, *Spiritus Aethereus*, *Spiritus Formicarun*, *Alcohol*, and *Tinctura Iodi* in the preparation direct (dilution of 2 or 5 Cc. with 20 or 50 Cc. of water).—Arch. d. Pharm., *243*, No. 7 (1905), 555.

Saké—Manufacture and Biology.—Professor Albert Schneider contributes a highly interesting paper on the manufacture and biology of "Saké," or "Saki," the national alcoholic beverage of the Japanese, concluding his paper with the following brief summary of its contents:

1. Saké is an alcoholic beverage made from steamed rice subjected to fermentation. It is the national drink of Japan, being used as a wine, and usually heated before drinking. Foreigners usually drink it cold. It has a sweetish, acid, alcoholic, vinous taste, and is intended to be taken in small quantities like wine. It is without bead or head, thus resembling still wines.

2. The process of saké manufacture is similar to that of beer brewing. The chief differences are in the use of material, rice being used in one and barley and hops in the other. Another difference is in the nature and origin of the starch ferment or diastase. In saké it is organized; in beer it is unorganized.

3. The alcoholic percentage of saké varies between the possible extremes 13 and 19 per cent. The more usual strength is from 14 to 16 per cent.

4. Saké produces a rapid but transient form of intoxication. It has a peculiar flavor, by some compared with that of bad or spoiled beer and wine.

5. Saké does not keep well, becoming easily and quickly changed in hot weather. Its keeping qualities are improved by pasteurizing, and also by the use of preservatives.

6. It is desirable to use pure cultures of saké yeast. This is done by some of the more progressive saké brewers.—Merck's Rep., Nov. and Dec., 1905, 335–337 and 365–367.

Aether Aceticus, B. P.—Proposed Method of Preparation.—"A Junior Pharmacist" suggests that, inasmuch as the B. P. gives no quantities for the manufacture of acetic ether, the following is a satisfactory formula: Sulphuric acid, 200 Cc.; glacial acetic acid, 250 Cc.; alcohol (90 per cent.), 250 Cc. Mix *secundum artem*, and allow to stand for a few hours. Distil from over a sand-bath, gradually adding 2,000 Cc. of a mixture of glacial acetic acid and alcohol (90 per cent.) in equal quantities. Digest the distillate for twelve hours or more with dried potassium carbonate, and redistil. Collect not more than 1,400 Cc. of acetic ether.—Pharm. Journ., Sept. 30, 1905, 462.

Ethyl Chloride—Characters.—The Austrian Pharmacopœia VIII demands the following characters for ethyl chloride: Boiling-point, 12.5° C.; specific gravity, 0.921 at 0° C.; sparingly soluble in water, readily soluble in alcohol; shall leave no residue on evaporation. The freshly-prepared aqueous solution should not react acid on litmus, and, after addition of nitric acid, should not give a precipitate with silver nitrate.—Pharm. Ztg., li, No. 28 (1906), 321.

Salicylic Ether—Properties and Therapeutic Uses.—Salicylic ether, or salicylic acid ethyl ester, $C_6H_4.OH.COOC_2H_5$, is now an article supplied for medicinal use. It is a colorless fluid having a peculiar odor, which boils at 231° C. and is miscible in all proportions with alcohol, but practically insoluble in water. It is possibly useful as an internal remedy for rheumatism. When applied externally it is not absorbed.—Pharm. Ztg., li, No. 30 (1906), 341; from E. Merck's Report, 1905.

Chloroform—Influence of Light and Air.—N. Schoorl and L. M. van der Berg have investigated and studied the process of decomposition of chloroform produced by the action of sunlight and air, with results which in the main confirm those described by Biltz in 1898; but they point out that chlorine is not initially a product of the decomposition by sunlight, hydrochloric acid being the initial product under ordinary conditions. It is only with free access of oxygen that chlorine is eliminated. Biltz, who had attempted no quantitative determination, explained the reaction to take place according to the following equation:

$$2CHCl_3 + 3O = 2COCl_2 + H_2O + 2Cl;\ COCl_2 + H_2O = CO_2 + 2HCl.$$

This can be, however, formulated more simply as follows:

$$2CHCl_3 + 3O = COCl_2 + CO_2 + 2HCl + 2Cl.$$

The authors, convinced that primarily the decomposition results in the elimination of HCl, and not of Cl, believe that under normal conditions the decomposition of chloroform by exposure to sunlight may be expressed by the formula:

$$CHCl_3 + O = COCl_2 + HCl.$$

If, however, the chloroform is exposed freely to air (or to oxygen) and sunlight, then the results of the decomposition may be expressed by the formula:

$$2CHCl_3+5O=2CO_2+H_2O+6Cl.$$

Intermediate between this maximum of oxidation and the normal decomposition a series of intermediate decompositions, depending on the amount of accessible oxygen, doubtless exist, in which variable proportions of CO_2, Cl, HCl, $COCl_2$ and H_2O are found as products of the decomposition by the combined effect of sunlight and air.—Pharm. Ztg., l, No. 90 (1905), 951; from Pharm. Weekbl., 1905, No. 43 and 44.

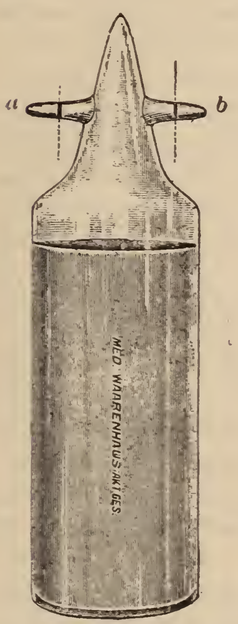
Chloroform—Important Precautions in Determinations of the Boiling-Point.—Arzberger calls attention to the importance of continuing the distillation of chloroform until the last drop has passed over when making determinations of the boiling-point of chloroform. In the presence of small quantities of water, which cause the rapid decomposition of the chloroform, the sample will show a perfectly normal boiling-point until the moment when the last drop vaporizes; the temperature rises markedly; but if the chloroform is perfectly pure and dry the thermometer will uniformly show the temperature of 62° until the last drop is distilled over.—Pharm. Ztg., li, No. 28 (1906), 321; from Pharm. Post, 1906, No. 8.

Chloroformium Pro Narcosi—Preparation According to the Dutch Pharmacopœia.—The new Pharmacopœia of Holland directs that chloroform for anaesthesia be prepared from chloral hydrate by the following process: Gradually add a solution of 30 Gm. of sodium hydroxide in 200 Gm. of water to a solution of 100 Gm. chloral hydrate in 200 Gm. of water, filter the separated chloroform, dry it during 6 hours over calcium chloride, filter it again and rectify it by distillation from a water-bath, excluding direct light and rejecting the first and last one-tenth of the distillate. To the intermediate eight-tenths add 1 per cent. of absolute alcohol; before this addition the (alcohol-free) distillate should have the sp. gr. 1.498–1.500.—Pharm. Ztg., li, No. 28 (1906), 321.

Chloroform for Anæsthesia—Container.—To secure anæsthetic chloroform from the action of light and air it is supplied by a Berlin firm in sealed containers, having a capacity of about 60 Cc. In use the sealed points *a* and *b*, Fig. 52, are broken off, and (as shown by Fig. 53), the chloroform is then delivered, drop by drop, as may be required for the operation, without risk of contamination from external influence.—Pharm. Ztg., l, No. 98 (1905), 1034.

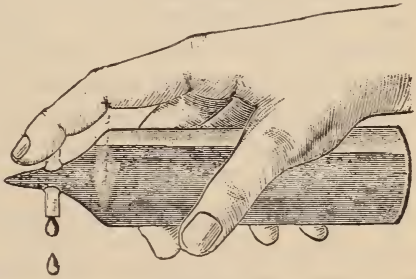
Chloroform and Bromoform—Electrolytic Method of Preparation.—Tröchinsky has found it quite practicable to produce chloroform and bromoform direct from mixtures of suitably diluted alcohol and of the calcium chlorides and bromides respectively by an electrolytic process, which is carried out as follows: A solution of calcium chloride, containing in 100 Gm. of water, 50 Gm. of $CaCl_2.6H_2O$, and 0.6 Gm. of alcohol, is subjected at 55° C., to the electrolytic action in a current of 4 Amp. to 1 Gdm. to 2.5–5 V. tension at the electrodes. This results in the conversion of the chloride into hypochlorite, and this by its action on the alcohol in the presence of water produces chloroform—the yield in the experiment described being about 30 Cc. Bromoform is obtained in the same way, substituting calcium bromide for the chloride.—Pharm. Ztg., li, No. 11 (1906), 118; from Chem. Ztg., 1906, No. 8.

FIG. 52.



Container.

FIG. 53.



Container.

Chloroform—Direct Preparation from Gaseous Methane.—According to a French patent, secured by H. S. Elworthy and D. Lange, chloroform may be prepared by the direct action of gaseous methane and chlorine upon each other by the intervention of suitable gaseous diluents, such as nitrogen and carbonic dioxide, to modify the reaction and to permit careful supervision of the process. The reaction, which without this precaution often takes place with explosive violence, is explained by the equation, $CH_4+6Cl=CHCl_3+3HCl$. The methane may be derived from any source, but the chlorine is preferably that obtained by electrolytic methods. Measured volumes of the gases are mixed with the indifferent gas in suitable chambers, and the mixture is passed through a series of retorts in which the combination is effected quietly, danger from reversion of flame into the mixing chamber being prevented by the interposition of a platinum web. The chloroform is purified by suitable methods, while the hydrochloric acid produced is absorbed by soda. Under the same patent

Iodoform is produced by mixing potassium iodide with an alcoholic solution of chloroform, the reaction being explained by the equation, $CHCl_3+3KI=CHI_3+3KCl$. The resulting iodoform is collected on the suction-filter (washed) and dried.—Pharm. Ztg., l, No. 96 (1905), 1008.

Iodoform—Convenient Method of "Home" Preparation.—Luther F. Stevens, in a paper entitled "Iodoform at Home," gives and recommends the following formula and process for the convenient preparation of iodoform: Potassium iodide, 100; dissolve in water, 2,000; add sodium hydroxide, 2 and acetone, 7. Mix well, and add fresh and properly prepared solution of sodium hypochlorite of U. S. P. strength, drop by drop, as long as a precipitate is formed, as evidenced by a light-yellow ring as it comes in contact with the reacting solution. An excess of hypochlorite must be avoided. When the formation of the light-yellow ring, and consequent precipitate ceases, it is a sign that the iodide is used up. Should a dark color appear, then the acetone is gone; if an orange, then iodates are forming from an excess of hypochlorite. After decanting the mother liquor, the iodoform is collected on a filter and dried in the dark between layers of absorbent material. Prepared in this way, 993.36 of potassium iodide and 57.87 of acetone, yield 785.12 of iodoform.—Proc. N. Y. State Pharm. Assoc., 1905, 92–94.

Iodoform—Influence of Light and Air.—N. Schoorl and L. M. van der Berg, having studied the nature of the influence of light and air on chloroform (which see), extended their inquiries in the same direction to iodoform. Contrary to their experience with chloroform, the character of the decomposition of iodoform is not influenced by the amount of air (oxygen), iodine, carbon dioxide and monoxide, and water being formed under all conditions. But here also two distinct processes come under consideration, these being explained by the following equations:

$$2CHI_3+5O=2CO_2+H_2O+6I$$

and

$$2CHI_3+3O=2CO+H_2O+6I.$$

In practice the second reaction is the one that occurs under normal conditions. Hydriodic acid was not discoverable among the products of decomposition under any conditions that came under observation. As regards the preservation of iodoform, the authors do not consider the exclusion of air important. It suffices to exclude exposure to the direct sunlight.—Pharm. Ztg., l, No. 90 (1905), 951; from Pharm. Weekbl., 1905, Nos. 43 and 44.

Aldehydes—Action on Mercuric Oxide.—Alexander Leys prepares a reagent which may be made available for differentiating certain aldehydes, as follows: One Gm. of powdered mercuric oxide is dissolved by gently warming in 100 Cc. of a freshly made 5 per cent. solution of sodium sulphite; on cooling, the solution is carefully filtered out of contact with ammoniacal vapors. This liquid, treated with a few drops of an aldehyde solution and the same volume of very dilute caustic soda, produces in the cold a heavy white precipitate. The reaction is only given by aldehydes containing the —$CH_2.CHO$ group, and may therefore be used as a distinction between acetic and formic aldehydes. For the success of the reaction both the aldehyde and the alkali must be dilute. The white precipitate is insoluble in water, potassium iodide, boiling dilute sulphuric acid and in alcohol; it dissolves readily in a solution of potassium cyanide, but with difficulty in warm dilute nitric acid, the solution so obtained giving no reaction for a sulphate; it dissolves in warm dilute hydrochloric acid. Alcohol has no influence on the reagent, and may be used to keep the aldehyde in solution. The presence of terpenes must be avoided, as they also produce precipitates. Acetone and acetyl acetone produce precipitation, but only after warming.—Pharm. Journ., Oct. 21, 1905, 554; from Jour. de Pharm. et Chim., 1905 (6), *22*, 107–112.

Acetaldehyde—Quantitative Determination.—Seyewitz and Bardin recommend the following convenient method for the quantitative determination of aldehyde, which is not interfered with by the presence of alcohol, paraldehyde, or acetal: The acetaldehyde solution is diluted so as to contain not more than 7 or 8 per cent.: then 10 Cc. of the diluted solution are mixed with about 40 Cc. of a 10 per cent. solution of anhydrous sodium sulphite, a few drops of alcoholic phenolphthalein solution (previously carefully neutralized with acid) are added, and, after the mixture has cooled to 4–5° C. it is titrated with volumetric sulphuric acid, the percentage of aldehyde being calculated according to the equation: $2SO_3Na_2+2CH_3.COH+SO_4H_2=(SO_3HNa+CH_3.COH)_2+SO_4Na_2$.—Pharm. Ztg., l, No. 80 (1905), 843; from Bull. Soc. Chim., 1905 (3), 1000.

Formaldehyde—Specific Gravity of Aqueous Solutions.—F. Auerbach and H. Barshall have made careful determinations of the specific gravity of aqueous solutions of pure formaldehyde, with the results shown in the following table:

Gm. Formaldehyde (CH_2O)		Specific Gravity at 18° C.
in 100 Cc. Solution.	in 100 Gm. Solution.	
2.24	2.23	1.0054
4.66	4.60	1.0126
11.08	10.74	1.0311
14.15	13.50	1.0410
19.89	18.82	1.0568
25.44	23.73	1.0719
30.17	27.80	1.0853
37.72	34.11	1.1057
41.82	37.53	1.1158

The figures in this table are based on water at its maximum density (4°), and vary materially from those in Lüttke's table; presumably because Lüttke only deals with volume percentage, and possibly also because of more or less impure solutions employed for his determinations.—Pharm. Ztg., l, No. 80 (Oct. 7, 1905), 843; from Arb. aus d. Kais. Ges.-Amt., xxii, No. 3.

Formaldehyde—Feeble Acid Properties.—The studies of H. and A. Euler have demonstrated the fact that formaldehyde possesses feeble acid properties. It must be regarded as a weak acid, capable of forming salts with strong bases. A neutral solution of the

Formaldehyde Monosodium Salt contains about one-half the salt as such, the remaining half consisting of free formaldehyde and free base. In dilute solution the formaldehyde salt may be treated as a binary electrolyte; the energy (dissociation-constants) of formaldehyde amounts to 1.10–1.14 at 0°.—Pharm. Ztg., l, No. 80 (1905), 843; from Ber. d. D. Chem. Ges., *38*, 2551.

Formaldehyde—Estimation of Concentrated Solution and Detection of Minute Quantities.—C. Goldschmidt finds that the solubility of pyridine and quinoline-bases in concentrated solution of formaldehyde may serve for the estimation of the latter. These bases are very readily soluble in cold, 30 to 40 per cent. solutions of formaldehyde, but insoluble in 25 per cent. solutions. The detection of very small quantities of formaldehyde is readily accomplished by means of aniline or hydrochloride of phenylhydrazine and ferric chloride. On adding aniline to a solution containing formaldehyde, anhydroformaldehydeaniline is formed, the solution becomes turbid even in dilutions of 1 : 20000. If to a formaldehyde solution, phenylhydrazine hydrochloride and ferric chloride, followed by H_2SO_4, are added, an intense red color is developed, which is distinct even in dilutions of 1 : 40000. With phenylhydrazine hydrochloride, followed by sodium nitroprusside and concentrated sodium hydrate solution, a blue solution is formed, which changes to red on standing some time.—Pharm. Ztg., l, (1905), No. 104 1096; from Journ. f. prakt. Chem., 1905, No. 23.

Formaldehyde—Extremely Sensitive Reaction.—E. Verisenat calls attention to an extremely sensitive reaction of formaldehyde, which is dependent on the observation that if an albuminoid substance, in aqueous solution or suspension, is treated with weak solution of a nitrite in hydrochloric acid, a faint violet-rose to violet-blue color is developed in the presence of mere traces of formaldehyde. The reagent is prepared by adding 0.25 or 0.50 Cc. of a 3.6 per cent. solution of potassium nitrite to 1 liter of hydrochloric acid, sp. gr. 1.18, designated as *weak* and *strong nitrite acid* respectively. The test is carried out as follows: Dissolve 0.1 Gm. of powdered albumen in 2 to 3 Cc. of water, add 1 drop of the liquid to be tested for formaldehyde, and then three times the total volume of *strong nitrite acid.* In the presence of formaldehyde, an immediate rose color is developed, changing to intense violet-blue within 5 minutes, the reaction being facilitated by heating to 50° C. In the absence of formaldehyde, no color is developed, or, at most, a faint rose color will develop after several hours standing. By employing the *weak nitrite acid* and heating the mixture to 50° C. during 20 minutes, it becomes possible to detect the presence of 1 p. of formaldehyde in 10,000,000 parts of a solution of albumen.—Pharm. Ztg., li, No. 11 (1906), 118; from Bull. Soc. Chim., *33*, 1198, through Chem. C.-Bl., 1906, i, No. 1.

Formaldehyde — Determination by Means of Metol.—According to Thérenon, formaldehyde may be detected in milk, etc., by means of metol (methyl paraamidophenolsulphate), which produces a garnet-red color, slowly in the cold, more rapidly when heated, but avoiding a higher temperature than 75° C. The reaction is available in dilutions of 1 :40,000, and is not interfered with by the presence of acetic or lactic acids, or by the sulphates of sodium or magnesium. The garnet-red color is however changed to red-brown in the presence of the alkalies. In the practical application to milk, for instance, the casein is first precipitated by a few drops of diluted acetic acid; a few crystals of metol are added to the filtrate, which is then heated to about 75° C. In the presence of formaldehyde, a red color is developed within half an hour.—Pharm. Ztg., l, No. 87 (1905), 920; from Rép. de Pharm., 1905, No. 10.

Formaldehyde—Comparative Study of Tests.—Charles H. LaWall has made a comparative study of the following tests for formaldehyde, selected from among the many that have been proposed from time to time: Phenol-sulphuric acid; resorcinol-sulphuric acid; Hehner (sulphuric acid-ferric chloride, in presence of milk proteids) test; phloroglucol; phenylhydrazine-sodium nitroprusside; phenylhydrazine-potassium ferricyanide; resorcinol-soda; hydrochloric acid; sulphuric acid-morphine sulphate. The results, which are given in detail and in form of a table, lead the author unhesitatingly to the conclusion that the

Phenylhydrazine Test is the one to be preferred both on account of the simplicity and the decided reactions which are obtained in all of the dilutions with which experiments were made. It is carried out as follows: To 5 Cc. of the liquid to be tested which is contained in a test-tube, add a small portion of phenylhydrazine hydrochloride (about .05 Gm., or a portion the size of a small pea), then add 3 drops of a freshly-prepared 5 per cent. solution of sodium nitroprusside, and agitate the liquid thoroughly. The subsequent addition of solution of sodium hydroxide, drop by drop, until an excess has been added, will produce a yellow color in a blank experiment, while the presence of formaldehyde will be indicated by a blue color varying in intensity in proportion to the amount of the preservative present and shading off into a green (due to the combination of the blue and yellow), where the quantity is below 1-50000. This test can be applied to milk directly, in which case a grayish-green color is produced in the presence of formaldehyde, while a bright-yellow color is developed in pure milk. The test can also be applied to colorless liquids or distillates, but for the latter there is a modification which is still more delicate, which consists in using a 5 per cent. solution of potassium ferricyanide instead of sodium nitroprusside solution. In this case the color produced being a bright scarlet instead of a blue, and being so permanent as to last for several days, the before-mentioned blue color usually disappearing in a few hours at the outside. This latter modification is not applicable to milk directly, however, but may be applied to the distillate from a sample of milk. The first test, the one in which sodium nitroprusside is used, works equally well whether applied to the milk directly or to the distillate. The proper order of mixing the reagents must also be observed in this test as the color will not be produced even with large amounts of formaldehyde unless the method is carried out exactly as described above. This test in both of the modifications gives a color which is directly proportional in its intensity to the amount of preservative present, and can be applied to any colorless liquid irrespective of the amount of formaldehyde. —Proc. N. J. Pharm. Assoc., 1905, 67–73.

Formaldehyde—Value of the Phenylhydrazine Test to Differentiate from Vanillin.—In the course of an examination of ice-cream flavored with vanilla, Charles H. LaWall obtained apparently positive evidence of the presence of formaldehyde on applying the Hehner contact test, the resorcinol-sulphuric acid contact test, and the phenol-sulphuric acid contact test; but on applying the phenylhydrazine test (which see in the preceding abstract), negative results were obtained, and a further application of the phloroglucol, hydrochloric acid, and resorcinol-soda tests also gave negative results. Further investigation showed that the positive reactions observed were due to vanillin, and that this can be differentiated from formaldehyde by the negative results with the phenylhydrazine, or one of the other tests mentioned as not producing the reaction. The author's results with the different tests are shown in detail in the form of a table accompanying his paper.—Proc. Pa. Pharm. Assoc., 1905, 200–202.

Solid Formaldehyde Solutions—Process.—Dr. Robert Groppler has patented a process for producing formaldehyde solutions in solid form. Ordinary or dried, neutral or acid sodium soap, prepared from any kind of fatty acid, is dissolved in such quantity in aqueous solution of formaldehyde, by the aid of heat, until the solution solidifies on cooling. In this way 1 part of coconut-soda soap forms a perfectly solid, plastic mass with 3 parts of 35–40 per cent. solution of formaldehyde, while 2 parts of sodium stearate are sufficient to solidify 100 parts of 40 per cent. formaldehyde solution.—Pharm. Ztg., li, No. 13 (1906), 146.

Methyl Alcohol—Detection in Alcoholic Liquids.—The Committee on Adulteration of the N. Y. State Pharm. Assoc., with the object of establishing a test for the guidance of the Board of Pharmacy, recommend the following method of performing the test for detecting methyl alcohol in ethyl-alcoholic liquids: Take 0.5 Cc. to 1 Cc. of the suspected spirit, dilute with H_2O to make the liquid measure 5 Cc., pour it into a long test-tube and warm gently. A copper-wire spiral is heated to redness in a flame free from soot, and immersed in the liquid so as to reach the bottom of the test-tube. This treatment with the red-hot copper should be repeated several times, 3 to 5 Cc. of milk and a few drops of a dilute solution of ferric chloride are then added. This liquid is then carefully poured into a second test-tube containing a few Cc. of commercial sulphuric acid, in such a way that the liquid will float upon and not mix with the acid. This tube is allowed to stand for three minutes and then slowly rotated. The presence of CH_3OH is indicated by the production of a violet-blue zone at the line of contact of the two liquids. Acetaldehyde gives no violet-blue coloration. Certain other substances appear to yield the violet-blue color, but these are never present in the substances used for denaturing. To guard against a possible source of error, the milk, which often contains formaldehyde as a preservative, should be first tested in the manner above directed.—Proc. N. Y. State. Pharm. Assoc., 1905, 83.

Fusel Oil—Origin in Spirits.—Prof. Samuel P. Sadtler, quoting a paper recently communicated by Dr. Felix Ehrlich to the Society of German Naturalists and Physicians (Sept., 1905), gives an interesting account of the views held by the latter concerning the origin of fusel oil in spirits. The view that has prevailed generally since the time of Pasteur to the present was that fusel oil, or more especially its most important constituent, amyl alcohol, was formed in the fermentation of sugar by the action of bacteria. Ehrlich now points out that all the theories hitherto held with regard to the fusel-oil formation have rested upon false premises, and shows that fusel oil in the ordinary fermentation is produced not from the sugar, but from the products of decomposition of proteid matter, such as the amido acids, and, moreover, not by the action of bacteria, but under the influence of the vital activity of the yeast itself. The clue to this conclusion, based upon a long series of experiments, was given by the discovery of "isoleucine," which the author, somewhat more than two years ago, found in the last residue of the sugar industry, a strontium molasses residue, and which he subsequently has recognized as a most important product of decomposition, occurring in all albuminoids along with leucine. Omitting here the purely chemical questions involved, it may be stated that fermentation experiments with pure sugar and pure compressed yeast showed that in the fermentation upon the addition of leucine, inactive amylic alcohol, or on the addition of isoleucine, optically active lævo-rotatory amyl alcohol was regularly developed in amount equivalent to that of the amido acid (leucine or isoleucine) which disappeared. This, in view of the growing demand for fusel oil for various modern industrial uses, is of great technical importance, since with proper readjustment of the relative amounts of sugar and yeast it is possible to convert any amount of leucine that may be added to the fermenting mash into amyl alcohol, which can be later separated in the usual way without disturbing the conditions of the fermentation. The leucine for this purpose is easily obtainable from all kinds of waste products rich in proteid matter, such as the waste liquors from the strontium sugar-extraction process, or of starch and glue manufacture, and horn and blood-waste products, or other cheap proteid matter.—Amer. Journ. Pharm., Jan., 1906, 40–43.

Chloretone—Identification and Titration.—Denigés considers the following reactions sufficient for the identification of the tertiary trichlorbutylalcohol, known as a hypnotic and anaesthetic by the name of chloretone: If 5 Cc. of a 5 per cent. alcoholic solution of chloretone be boiled with 1–2 Cc. of solution of sodium hydroxide and allowed to cool, the clear solution produced becomes turbid on addition of mercuric sulphate; or, if instead of mercuric sulphate a few drops of fresh sodium nitroprusside are added, followed by acetic acid in slight excess, the well-known carmine color of Legal's acetone reaction is developed. Ammoniacal silver nitrate is decomposed by solution of chlorotone in the cold; Fehling's solution is reduced by it on boiling. The quantitative determination by titration is effected by adding to 10 Cc. of a 1 per cent. solution of chloretone, in diluted alcohol, 1–2 Cc. of solution of sodium hydroxide, free from chlorine, and 10 Cc. of alcohol, and heating the mixture to boiling. After cooling, 1–2 Cc. of nitric acid (1.39) are added, the liquid is adjusted with water to 100 Cc. and the sodium chloride formed is titrated in the usual manner with silver nitrate, using potassium chromate as indicator and calcium carbonate to render the liquid milky. One mol. of chloretone forms 3 mol. of sodium chloride.—Pharm. Ztg., l, No. 96 (1905), 1009; from Rep. de Pharm., 1905, No. 11.

Barium Cacodylate—Preparation.—According to A. Annoni, pure barium cacodylate, which is used for preparing the other salts of cacodylic acid, is advantageously prepared as follows: A mixture of equal weights of crystallized barium hydroxide and cacodylic acid is finely triturated in a mortar, baryta water being gradually added until a solution having a faintly alkaline reaction (to phenolphthalein) is obtained. After standing several hours, the solution is filtered, exactly neutralized with a fragment of crystalline cacodylic acid, and evaporated in a porcelain dish at a low temperature in a vacuum. The residue of evaporation is then heated for at least 3 hours in a well-closed oven over a mixture of potassium hydroxide, calcium oxide and calcium chloride, at 115° to 120° C., allowed to cool in the closed oven, quickly pulverized, and the hygroscopic powder preserved in well-closed, colored vials.—Pharm. Ztg., l, No. 80 (1905), 844; from Boll. Chim. Farm., 1905, No. 14.

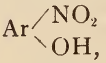
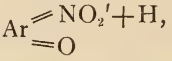
Guaicol Cacodylate—Preparation and Properties.—Burlureaux obtains guaiacol cacodylate by carefully melting molecular quantities of crystalline guaiacol and cacodylic acid together. It forms a white hygroscopic salt, soluble to amount of 5 per cent. in water, but readily separating from such solution on reduction of temperature. This may be prevented, however, by adding about 1 per cent. of "free guaiacol to the aqueous solution, which has the further advantage of anæsthetic action, so that the 5 per cent. solution may be injected subcutaneously without causing pain. It is easily soluble in alcohol, glycerin and fixed oils. It has been used with advantage in the treatment of the febrile conditions of tuberculosis, reducing also the exporation of phthisis, and acts in general as a tonic, being administered subcutaneously in doses of 1 Cc. of the 5 per cent. solution.—Pharm. Ztg., li, No. 27 (1906), 313; from L'Union Pharm., 1906, No. 3.

Potassium Guaiacolsulphonate — Properties and Test. — The Swiss Pharmacopœia Commission has adopted the following description of potassium orthoguaiacolsulphonate, commonly called

Thiocol: Colorless and odorless, crystalline powder, having at first a faintly bitter, afterwards sweetish taste. It is soluble in about 5 p. cold water and in 330 p. alcohol, nearly insoluble in absolute alcohol, and insoluble in ether, chloroform, benzol and acetone. Tartaric acid produces a white, crystalline precipitate in the solution (1 : 20), ferric chloride a deep-blue color, changing on addition of a little ammonia to red-yellow. Silver nitrate produces at first no precipitate in the solution (1 : 20), then a gray-black precipitate. If 2 Cc. of a solution 1 : 10 are boiled with 1 Cc. of nitric acid, the addition of barium chloride produces a white precipitate. The solution (1 : 20) should be faintly alkaline and should not become turbid on addition of barium chloride, or of sulphuric acid. If 1 Gm. is mixed with 3 Cc. of stannous chloride, the mixture should not aquire a darker color within 1 hour.—Pharm. Ztg., li, No. 45 (1906), 503; from Pharm. Post, 1906, No. 20.

Red Carbolic Acid—Characters of Coloring Matter.—A sample of red carbolic acid, giving the characteristic reactions of phenol, was subjected to examination by Hugo Kiehl. On subjecting it to distillation, a colorless phenol was obtained, and a very small quantity of a solid, violet-red body remained in the flask. This body was insoluble in water. When heated with ferric chloride solution it yielded on evaporation a faintly reddish residue. It was insoluble in dilute ammonia, and this produced no color reaction after contact with the insoluble body on addition of H_2O_2. The solution of this body in concentrated sulphuric acid gives no characteristic reaction with sodium nitrate.—Pharm. Ztg., l, No. 95 (1905), 1001.

Monochlorphenol, C_6H_4Cl, OH (4 :1), a para compound of phenol and chlorine, has been introduced into medicine as a powerful antiseptic and, it is claimed, been found useful in the form of 2 per cent. ointments in erysipelas and in syphilitic affections of the eye, and, in form of 5 to 20 per cent. glycerin-solution in the treatment of tuberculosis of the throat and larynx, as an inhalent in bronchitis and phthisis, etc. It occurs in form of colorless crystals, melting at 37° C., which are sparingly soluble in water, but readily soluble in alcohol, ether and alkalies.—Pharm. Ztg. li, No. 22 (1906), 248.

Nitrophenols—Question of Color.—It is generally assumed that the nitro compounds, and particularly the nitrophenols, are characterized by a yellow color, which is intensified by alkalies. A. Hantzsch and H. Gerke have now studied the question experimentally, and on the basis of the results obtained conclude that each nitrophenol is capable of forming two esters of different structure, and is therefore tautomeric. If, for instance, *Ar* represents the substituted radical, one of the nitrophenols, having the structural formula  $Ar\begin{array}{l}\diagup NO_2\\ \diagdown OH,\end{array}$ is colorless and not dissociated; the other, having the formula  $Ar\begin{array}{l}\diagup\!\!\diagup NO_2'+H,\\ =O\end{array}$ is colored and dissociated. The *true nitrophenols* are colorless, but by ionization they are converted into colored, much stronger acid forms, which are therefore designated as *aci-nitrophenols.* Inasmuch as in these the oxygen is regarded as in binary combination, as in the case of the strongly-colored quinones, Hantzsch designates the acid nitrophenols also as quinoid nitrophenols. The true nitrophenol esters, when pure, are colorless; the aci-nitrophenol esters are colored. The author discusses the conditions under which the one form may change into the other and return again into the original form, and thus throws a bright light upon certain phenomena of occasional occurrence in pharmacy which have heretofore not been satisfactorily explained.—Pharm. Ztg., li, No. 33 (1906), 374; from Ber. d. D. Chem. Ges., 1906, 1073 and 1084.

Phenol-Camphor—Not a Chemical Compound.—From the fact that in the liquified mixture composed of equal parts of phenol and camphor, the well-known caustic action of phenol is completely absent, and that the liquefaction of its two crystalline components is not the result of the action of an obvious third force, the assumption that the change in the state of aggregation and acquisition of new properties is due to the formation of a new chemical compound, seemed to be reasonable. The interesting studies of J. Lemberger, however, prove that this is not so. The remarkable elimination of the caustic effect of phenol is explainable by the difficult solubility of the phenol camphor, which must be regarded as being simply a mixture of its two components. The value of this mixture as an antiseptic is enhanced by the salts, which are abundantly present in the cellular tissues of the skin, which accounts for the favorable results obtained by its use. Similar loose compounds are obtained, some fluid, others of a butter-like consistence with mixtures of camphor, menthol, fenchone and carvone, with phenol, naphthol, carvacrol, anisol, eugenol, and guaiacol.—Pharm. Ztg., li, No. 38 (1906), 426; from Ther. d. Gegenw., 1906, No. 5.

Ketenes—A New Class of Compounds.—In a preliminary paper, Hermann Staudinger describes a new type of chemical compounds, which he designates as "ketenes," containing a carbonyl group doubly bound to a single carbon atom as expressed by the formula $R_1R_2C = CO$.

Diphenylketene, $(C_6H_5)_2C = CO$, was obtained by reducing diphenylchloroacetyl chloride, $(C_6H_4)_2C.Cl.COCl$, with zinc turnings in ether, the operation being carried out in an atmosphere of carbon dioxide, in which the substance may be kept unchanged for several weeks. A molecular weight determination in benzene solution gave the value 191.4 instead of 194. The pure ketone forms a liquid of the color of a concentrated solution of potassium dichromate. It is readily oxidized on exposure to air, and is converted quantitatively into diphenylacetic acid by treating its solution in ether with water; ethyl alcohol converts it into the ethyl ester of diphenyl acetic acid; dissolved in benzene it is converted by dry hydrochloric acid gas into diphenylacetyl chloride, whereas when the benzene solution is shaken up with dilute hydrochloric acid, diphenyl acetic anhydride is obtained; its ethereal solution is changed by moist hydrochloric acid gas in presence of zinc chloride into the above-mentioned ethyl ester. It forms addition compounds with bromine, carbon disulphide, and sodio-ethyl malonate.—Pharm. Journ., July 8, 1905, 33; from Ber. d. D. Chem. Ges., 1905, *38*, 1735.

Glycerin—Modification of the G. P. Tests.—Schmatolla proposes several modifications of the G. P. tests for determining the quality of glycerin. For the silver-reaction, which the author considers of particular value. 2 Gm. of glycerin should be used, and the reaction carried out at 75° C. The neutrality of the sample should be determined both with phenolphthaleine and with congo-red. The test for metals with hydrogen sulphide is best made on the undiluted glycerin. If for iron alone, the reaction with dilute tannic acid solution will suffice. Refined and distilled glycerins are differentiated by the ash-content, which in the distilled product rarely exceeds 0.1 per cent.—Pharm. Ztg., li, No. 32 (1906), 363.

Glycerin—" Its Mission."—Speaking in his characteristic vein on the subject of "A Little Glycerin," Professor John Uri Lloyd mentions that it chanced to be his lot to be close to the man who in this country was possibly the most enthusiastic of any man in behalf of glycerin, as witness his paper entitled "Glycerin—Its Mission," contributed to the Association in 1864, and printed in the Proceedings of that year (pp. 237–241). The author of that paper first made glycerin in the Middle West, and, although his idol has been shattered in some places, to-day he manufactures glycerin in quantities, of a quality he could not then, when it sold at two dollars a pound, presume to reach. He has seen its use increase enormously beyond the utmost anticipations of one even as enthusiastic as was himself nearly half a century ago; and yet, the facts are, in the direction that it was most consumed in that day and most favorably anticipated for the future, glycerin has largely passed out of use. To-day we find that glycerin in the preparations of the pharmacopœia has been critically relegated to the rear, as it rightfully should be. It is not a solvent for salts and fats, for the vegetable compounds and structures in which they take a part, nor indeed, is it a good extractive agent for the majority of the alkaloidal salts, and the glucosides, and the inorganic compounds that exist in plant structures. Hence, as the majority of drugs embrace in their structures a medley in which such substances as these take an important part, glycerin becomes too often a natural excluder, instead of a natural dissolver, and glycerin, therefore, should have no part in such preparations. Turning to medicine, Prof. Lloyd says that in the multitude of affections, in which, in 1864, glycerin was commended with such anticipatory enthusiasm, physicians no longer consider glycerin as a medicinal factor, excepting as a carrier of a few external remedies, as the glycerole of tar and such, in which it receives from physicians a little attention. And yet, as initially said, glycerin is now used in enormous amounts, as contrasted with its uses in the height of its speculative popularity. In the arts and in the industries, in the manufacture of explosives, as a diluent of remedies where alcohol is inadmissible, or where prejudice prevents the using of alcohol (perhaps to the injury of the preparation), glycerin is employed in quantities that almost stagger one who thinks of the fact that, scarcely half a century ago, it was a chemical novelty, mentioned only in chemical technical works, seen by but a few, scarcely found in a pharmacy, never in a doctor's office, its very name being so mispronounced by those who attempted to pronounce it as to make it ludicrous, should such pronunciation be to-day employed.—Midl. Drugg., March, 1906, 641–642.

FIXED OILS.

Uncommon Fixed Oils—Examination and Characters.—August Schroeder has reported the results of an investigation into the characters and constants of a number of fixed oils which have heretofore been insufficiently examined and described. The first of these,

Tangkalak Fat, was obtained to the amount of 51 per cent. from the seeds of *Lepidadenia Wightiana*, Nees, by extraction with petroleum ether. When purified by filtration in a hot-water funnel it formed a faintly yellowish liquid, which congealed at 27° C., forming a nearly white, brittle mass, composed of tufts of needle-shaped crystals. Neither odor nor taste are characteristic; m. p., 46.2° C.; sp. gr. at 41° C., 0.8734. It is soluble in equal weights of chloroform, carbon bisulphide, xylol and ether at 20° C., but requires one and one-half times its weight of benzol, ten times its weight of acetone, and fifteen times its weight of absolute alcohol at the same temperature; but these solubilities decrease with the reduction of temperature, so that at about 4° C. five times the quantity of solvents cited are required for one part of the fat. The following values of constants and variables represent the average of three determinations: Saponification number, 268.2; iodine number, 2.277; Reichert–Meissl number, 1.47; Hehner number, 76.05; acid number I, 3.35; acid number II, 8.815; glycerin, 13.03 per cent.; unsaponifiable, 1.44 per cent. The latter gave the reactions of phytosterin.

Oil of Nux Vomica was obtained to the amount of 4.2 per cent., by extracting the seeds of *Strychnos nux vomica* with ether. It was of a deep green color, strongly fluorescent, and had an extremely bitter taste At the ordinary temperature it separated solid glucosides, which did not melt completely below 20° C. Its sp. gr. at that temperature was 0.8826; its solubilities normal. The following constants, etc., were determined: Saponification number, 159–160.29; iodine number, 64.2; Reichert-Meissl number, 1.67–1.76; Hehner number, 94.86; acid number I, 27.4; acid number II, 69.2; acetyl number, 42.23; glycerin, 8.67 per cent; unsaponifiable, 16.93 per cent. The latter explains the remarkably low saponification number of this oil. The difference in the two acid numbers shows the progress of hydrolysis during the course of two weeks. The unsaponifiable substance consisted mainly of phytosterin with some colophonium-like body. Quantitatively, 3.18 per cent. of strychnine and brucine were determined in the oil.

Oil of Hevea. This was obtained in two forms, the one by extracting the seeds of the caoutchouc tree (*Hevea brazilliensis*, Mueller) with petroleum ether, which yielded 27.5 per cent. of clear, light yellow oil; the other by extraction of the seeds with ether, which yielded 24.32 per cent. of a deep green oil. The latter was thick-liquid in consistence, and formed a crystalline deposit at 15° C., which was completely liquified at 26° C., but at 21° C.

a deposit of solid glyceride was again formed. The sp. gr. of the oil at 20° C. is 0.9293. It is freely soluble in chloroform, ether, xylol, benzol, petroleum ether and carbon bisulphide, but not so soluble in acetone or alcohol, and gave the following constants: Saponification number, 198.23; iodine number (of the oil obtained with petroleum ether), 127.9 (of the oil obtained with ether), 117.49; Hehner number, 95.06; acid number, 57.4; acetyl number, 27.9; glycerin, 9.49 per cent.; unsaponifiable, 0.705 per cent.

Oil of Senega Root, which was obtained by Flückiger to the amount of 8.68 per cent., was obtained only to the amount of 4.55 per cent. from the root of *Polygala senega*, L. It was of a deep, dark-brown color, thick-liquid, had a mild taste and a faintly rancid odor; sp. gr. at 18°, 0.9616; readily soluble in ether, chloroform, benzol, acetone and carbon bisulphide, more difficultly soluble in alcohol and xylol, and only partially soluble in petroleum ether. The value of the constants and variables was found to be as follows: Saponification number, 193.51–194.14; iodine number (with unsaponifiable), 81.65–82.05 (without unsaponifiable), 78.13–78.61; Reichert–Meissl number, 6.43; Hehner number, 85.8; acid number, 37.9; acetyl number, 44.46; glycerin, 8.3 per cent.; unsaponifiable, 12.78 per cent. In conformity with these constants the composition of the oil is given in the following percentages: Unsaponifiable constituents, 12.78 per cent.; palmitin, 7.93 per cent.; olein, 79.29 per cent.—these including the volatile fatty acids, the percentage of which cannot be accurately determined, together with 19.75 per cent. of free fatty acids.—Arch. d. Pharm., *243*, No. 8 (1905), 628–640.

Castor Oil—Active Constituents.—After a lengthy and full description of the supposed active constituents of castor oil—ricinine, ricin, and ricinolic acid—Horace Finnemore and Harold Deane come to the conclusion that the purgative action of castor oil is due to the fatty acids, but it is not quite clear whether ricinolic acid has been obtained absolutely pure, or that it is the only fatty acid in the oil, and in any case it appears that there must be other undiscovered fatty acids.—Trans. Brit. Pharm. Conf. (Yearbook of Pharm.), 1905, 473–479.

Castor Oil—Superior Miscibility with Balsam of Peru and Storax.—Alblas-Sorber calls attention to the superiority of castor oil over other oils for admixture with balsam of Peru (which see). He attributes this property to the absence of triolein, and finds that the addition of a small proportion of castor oil enables the preparation of smooth mixtures with such oils as almond, olive, rape-seed, sesame, and cod-liver oil, all of which by themselves are immiscible with large percentages of the balsam, although forming smooth mixtures with small percentages. Furthermore, the author finds that, in a similar way, it facilitates the exhibition of storax in oily mixtures, and is particularly recommended to replace the olive oil usually prescribed in such mixtures for the treatment of scabies.—Pharm. Ztg., l, No. 97 (1905), 1023; from Pharm. Weekbl., 1905, No. 46.

Coconut Oil—Test of Purity.—E. Millian describes the following test to determine the purity of coconut oil: Four Cc. of the clean, water-free fat is introduced into a test-tube with 2 Cc. of ethereal solution of phloroglucin and mixed by circular agitation; 2 Cc. of benzene solution of resorcin is then added and the whole again mixed. The tube is then immersed for a few minutes in ice-water, to bring the temperature to 10° C.; 4 Cc. of pure nitric acid, sp. gr. 1.35, free from nitrous fumes, is then added, and the tube being closed with a rubber cork previously washed with the same acid, the whole is well shaken for five seconds. Pure coconut oil remains perfectly unaltered, negligible traces of impurities may impart a scarcely perceptible rose tint to the mixture; but the presence of any seed oil such as cotton, sesame, arachis, etc., will at once be indicated by a distinct currant-red color if 5 per cent. of the adulterant be present. The color reactions which occur later, when the temperature of the mixture rises to 40° C., are disregarded. It is important that the reagents and solvents employed should be absolutely pure, and that the temperature of the reagents and the oil should be between 10° C. and 12° C.—Pharm. Journ., Sept. 9, 1905, 361; from Compt. rend., 1905, *140*, 1702.

CARBOHYDRATES.

Cellulose—Variety Insoluble in Ordinary Copper-Ammonia Solution.—The best solvent for cellulose is a solution of copper oxide in ammonia, but H. Riesenfeld and F. Taurke found that a specimen of pure cellulose was quite insoluble in this reagent. On the other hand, a solution of copper carbonate in ammonia (prepared by adding the calculated quantity of sodium carbonate to an aqueous solution of copper sulphate, collecting and washing the green precipitate and dissolving it in concentrated ammonia) proved to be a very good solvent for this particular specimen of cellulose, which is again precipitated from this reagent, however, on the addition of water, certain salts, acids or alcohol. Iron, nickel and tin have no effect on this solution, while zinc, cadmium, aluminum and lead precipitate both copper and cellulose. When the solution is heated, a brown precipitate separates, which has a nearly constant copper-content, but a somewhat varying percentage of cellulose.—Chem. News, Oct. 27, 1905, 201; from Ber. d. D. Chem. Ges., 1905, No. 12.

Non-Inflammable Celluloid—Production by Addition of Boric Acid.—According to an English patent issued to W. C. Parkin and A. Williams, a non-inflammable form of celluloid is obtained by the addition of boric acid to the usual components, in the following proportions: Nitrocellulose, 4 p.; camphor, 2 p.; boric acid, 3 p.—Pharm. Ztg., li, No. 20 (1906), 227.

Sawdust—Detection in Meal.—P. Paganini recommends the following method for detecting the presence of sawdust in meal: The meal is spread out in a thin layer, moderately pressed, and a few drops of an aqueous 20 per cent. solution of *p*-phenylenediamine solution, followed by a few drops of acetic acid, are allowed to fall on the prepared surface. In the presence of sawdust the ligneous splinters assume at once a fine yellow-red color, while the fragments of bran, if present, either do not become colored at all, or, at most, show a faint brownish color. The method is much more sensitive than that recommended by Wiesner, in which phloroglucin and hydrochloric acid are employed.—Pharm. Ztg., l, No. 97 (1905), 1022; from Giorn. della Soc. ital. d'Igiene, 1905, No. 66.

Starches—Characters of Foreign Varieties.—E. Hess describes the characters of a number of starches and flours, which are used in the French Colonies. For more exact details the original paper must be consulted, but the following brief description may be useful for reference:

Caryota urens.—Grains mostly simple (8 to 139$^{\mu}$ by 4.5 to 63$^{\mu}$), elongated, cylindrical, or pear-shaped, with evident eccentric hilum and conspicuous striation. Raphides (54 to 158$^{\mu}$) are present, as well as parenchymatous cells, stone cells, and fragments of large spiral vessels.

Artocarpus incisa.—Starch grains, all compound (mostly six to ten); measurements, 9 to 31.5 by 4.5 to 22.5; neither hilum nor striation visible; many fragments of large, thick-walled, parenchymatous cells, laticiferous cells (18 to 38$^{\mu}$ wide), and bluntly pointed, thick-walled hairs (145 to 153$^{\mu}$).

Alocasia macrorhiza.—Simple rounded grains and compound grains (2 to 3), the former 9 to 45$^{\mu}$ with central, radiate hilum; the component grains of the compound starch muller-shaped, etc.; occasional long, narrow raphides, fragments of spiral and reticulate vessels.

Inocarpus inedulis.—Starch mostly compound (2 to 3, occasionally more), the component grains measuring 6 to 27$^{\mu}$ by 4.5 to 22$^{\mu}$, neither hilum nor striation visible; thin-walled parenchyma, spiral vessels, thin-walled, one-celled brown hairs, and fragments of large sclerenchymatous fibres.

Amorphophallus Rivieri.—Large parenchymatous cells, associated with much mucilage; starch compound 6.5 to 3.9$^{\mu}$, the components very minute; raphides are also present.—Pharm. Journ., Feb. 10, 1906, 129; from Ztschr. d. Oesterr. Apoth. Ver., *44*, 25.

Sugar—Antiseptic Action of its Combustion-Vapors.—A. Trillat, having found that a considerable amount of formaldehyde, together with methyl alcohol, acetone, acetic acid, phenolic bodies, and benzaldehyde are present in the combustion-products of burning sugar, made some interesting experiments on the germicidal value of these vapors. For this purpose, various objects contaminated with germs were submitted to the vapors given off by burning sugar in a chamber of 100 cubic meters. As less resistant germs, *B. coli communis* and typhoid bacillus were used; to represent the more resistant spore-bearing anthrax bacilli and *Staphylococcus aureus* were selected. The contaminated articles were left in the chamber for six hours, and cultivated. The results obtained, although less favorable than those given by formaldehyde alone, show that burning sugar has a very considerable disinfectant value, and that it might be usefully employed in many cases, as, for instance, in places far distant from towns, as a means of practical disinfection. The deodorizing action of the vapors given off is very marked. Probably also, by improved methods of burning, even better results might be obtained; such was found to be the case when molasses was substituted for sugar. It is evident when examining the ancient recipes for disinfection by fumigation that, although the authors knew nothing of formaldehyde, they have selected ingredients which modern investigation has shown to yield the largest quantities of that body. Further, the directions given for burning the fumigating materials are precisely those which have been found to ensure the production of the greatest quantity of that antiseptic and germicide.—Pharm. Journ., Aug. 19, 1905, 251; from Comp. rend., 1905, *141*, 215.

Glucose—Modified Method of Determination with Fehling's Solution.—P. Lavalle recommends the following modification of the method of sugar determinations, which is based upon the solubility of cuprous oxide in excess of alkali, and consequently avoids the formation of a precipitate, the end of the reaction being evidenced when the liquid becomes completely colorless: A mixture of 5 or 10 Cc. of Fehling's solution, 30 Cc. of sodium hydroxide solution (1 : 3) and 50 or 60 Cc. of water is heated in a porcelain capsule of 200 Cc. capacity, and when it begins to boil the sugar solution under examination is gradually added until the last drop discharges the blue color of the Fehling's solution completely. The formation of a precipitate is thus practically avoided, the colorless liquid containing at most a very insignificant quantity.—Pharm. Ztg., li, No. 11 (1906), 120; from Chem. Ztg., 1906, No. 3.

Milk Sugar—Technical Production.—Milk sugar is prepared by R. Nielsen (under a Danish patent) as follows: The whey separated from the curd is concentrated to one-fourth its original volume, the albuminoid and fat being carefully skimmed as they separate during the evaporation. The liquid, further clarified by filtration, is then again concentrated to one-fourth its weight, forming a syrup-like mass, from which the milk sugar crystallizes out. The residual syrup, after removal of the crystals, is diluted with water, heated with 0.1 per cent. of animal charcoal, 0.2 per cent. acetic acid, and, when near the boiling-point, with 0.2 per cent. of magnesium sulphate; it is then boiled, filtered, the filtrate treated with alum and animal charcoal, evaporated to syrupy consistence, crystallized, and subjected to centrifugation.—Pharm. Ztg., li, No. 3 (1906), 31.

Milk Sugar—Characteristic Reaction with Diphenylhydrazine Hydrochloride.—Graaf bases a characteristic reaction for milk sugar, which differentiates it from all other sugars and carbohydrates on the following observation: If an aqueous solution, diphenylhydrazine hydrochloride, $(C_6H_5)_2N.NH_2.HCl$, is treated with solution of sodium hydroxide, the free base is liberated and may be shaken out with ether, which leaves it on evaporation in form of a brown-violet oil. If then a drop of this oil is added to a few milligrammes of lactose, and 2 to 8 drops of glacial acetic acid, and the mixture is heated, the violet color changes to yellow-red, brown-red and dark green, and if on appearance of the latter color a few cubic centimeters of diluted alcohol are added, a characteristic green solution is obtained. This reaction is produced with equal facility with lactose in admixture with other sugars.—Pharm. Ztg., li, No. 30 (1906), 341; from E. Merck's Annual Report, 1905.

Milk Sugar—Characters.—J. D. Riedel & Co. finds that commercial milk-sugars, although in the main fairly conforming to the moderate requirements of the G. P. IV, are frequently contaminated with impurities derived from the milk, acids, metals, fungoid matter, etc., etc., and therefore recommend the following pharmacopœial characterization and tests:

Whitish masses in clusters or plates, or a white, odorless powder, soluble in about 5 p. of cold water and in 1 p. at the boiling-point, producing a colorless, transparent, or at most an opalescent solution. A hot solution of 1 part in 2 parts of water should be odorless, should not froth when shaken, should not change litmus paper, and should become colored by hydrogen sulphide. The ash obtained on incineration should not exceed 0.2 per cent. The milk-sugars of the market usually prove to be free from cane sugar when tested by the official method.—Pharm. Ztg., li, No. 23 (1906), 259.

Milk Sugar—Adulteration.—E. H. Gane calls attention to a recently observed gross adulteration of milk-sugar, the adulterant consisting of a fine grade of glucose, known commercially as confectioner's grape sugar, or starch sugar. The same firm that offers this mixture, also offers a product under the name of "Pure Lactose Sugar," which consists wholly of grape sugar or glucose. The observation is interesting because heretofore milk sugar, whether of domestic or foreign origin, is usually of good quality and has rarely been subject to adulteration. The detection of the adulterant is fortunately easy for the retail druggist, who is most likely to be imposed upon by this sophistication—the far greater solubility of the adulterant in water, and the absence of the "sandy" feel on the tongue characteristic of pure milk sugar, being sufficient to identify the so-called "lactose sugar."—Amer. Drugg., Feb. 26, 1906, 99.

ORGANIC ACIDS.

Acidity of Fruits—Cause of Apparent Increase after Boiling.—W. F

Sutherst finds that the apparent increase of acidity in fruits, as noticed, for instance, on comparing the sweetness of raw black currants with the rather sour nature of the mass obtained after cooking, is due to two causes: in some degree, to the conversion of the cane sugar present in certain proportions to the less sweet invert sugar, and more particuliarly to the fact that the skin of the fruit contains a larger percentage of acid than the pulp, the portion which is eaten, especially in such fruits as plums, gooseberries, currants, etc. On analysis of such, however, the skin was found to contain 2.66 per cent. of acid, calculated as tartaric acid, whilst the pulp contained only 1.80 per cent. During the boiling or cooking of the fruits, the whole of the acid in the skin is extracted and the resultant semiliquid mass therefore contains all the acid.—Chem. News, Oct. 6, 1905, 163.

Formic and Acetic Acids—Compounds with Ferric Chloride.—In the course of investigation concerning the action of moderately concentrated organic acids upon metallic chlorides, A. Benrath obtained compounds of ferric chloride with formic and acetic acids:

Ferrichloride Formate, $Fe_2Cl_2(HCO_2)_4 + H_2O$, separated from a warm solution of 5 p. of sublimed ferric chloride in 10 p. of formic acid, in the form of small, yellow crystals, which are soluble in hot alcohol, hot water, and hot glacial acetic acid, but insoluble in ether, benzol, cold alcohol, cold water, or cold glacial acetic acid.

Ferrichloride Acetate, $3Fe_2Cl_2(CH_3CO_2)_4 + C_2H_4O_2 + 2H_2O$, is obtained in the form of small, garnet-red, rhombic crystals, both from cold and from warm solutions of ferric chloride in glacial acetic acid. The crystals are readily soluble in water, alcohol, or ether, and may be recrystallized from glacial acetic acid without decomposition.

Ferrichloride-Chlor-Acetate, $Fe_2Cl_2(C_2H_2O_2Cl)_4 + H_2O$, is obtained by melting together equal parts of crystallized ferric chloride and chloracetic acid. The properties of this salt are very similar to those of the acetate. It is readily soluble in water, alcohol and ether, insoluble in benzol.—Pharm. Ztg., l, No. 80 (1905), 843; from Journ. f. prakt. Chem., 1905, No. 17.

Acet-Acetic Acid—Determination in Urine.—Dr. Otto Mayer recommends the older Gerhardt's reaction as preferable to all others for the detection of acet-acetic acid in urine, and carries out the reaction as follows: A few Cc. of the reagent, composed of a mixture of 5 Cc. of solution of ferric chloride and 95 Cc. of solution of sodium chloride (1:3), are placed into a test-tube and carefully covered with an equal volume of urine, preferably freshly voided. In the presence of acet-acetic acid a Bordeaux-red ring is developed at the point of contact of the two liquids, varying in intensity according to the amount of acid present, but recognizable by a rose-red ring even in dilutions of urine 1:20. The observation is facilitated by viewing the reaction by reflected light with a white background of filter-paper. The presence of acet-acetic acid is confirmed by repeating the test on a portion of the same urine after boiling it for about five minutes and allowing it to cool. On now repeating the test, *no* color reaction should result. If it results after such treatment it may be due to acetates, rhodanides, phenols, pyrazolene, etc. A drawback is the instability of the color, particularly under the influence of heat.—Pharm. Ztg., l, No. 95 (1905), 1001.

Arsenacetate (*Acetic Acid-Arsenous Acid Anhydride*)—*Preparation and Characters.*—A Pictet and Bon have obtained arsenacetate, the anhydride of acetic and arsenous acids, by gradually adding finely-powdered arsenic trioxide to hot acetic acid anhydride as long as the former is dissolved, then subjecting the product of the reaction to fractionation in a vacuum. So obtained, arsenacetate has the formula $As(CH_3COO_3.)$ It crystallizes from benzol or carbon tetrachloride in form of white needles, which melt at 82° C., are readily soluble in chloroform and in acetic ether, more difficultly soluble in benzol and in carbon tetrachloride, and almost insoluble in petroleum ether and in carbon bisulphide. On exposure to moist air the compound is rapidly split into acetic acid and arsenic trioxide (As_2O_3). By the action of glycerin or phenol on arsenacetate, at the ordinary temperature,

Glycerinarsenite and Phenylarsenite, respectively, are formed. Glycerinarsenite is a colorless liquid, which boils at 150° C., and then on cooling congeals to a glassy mass. Phenylarsenite, $(C_6H_5O)_3As$, is a thick liquid, which boils at 279° C.

Arsenbenzoate (benzoic-acid, arsenous acid anhydride) may also be obtained from arsenacetate, by melting the latter with benzoic acid. It forms a white crystalline mass, having the composition $(C_6H_5COO)_3.As$, which melts at 155° C., is readily soluble in chloroform, more sparingly in benzol and in acetic ether, and difficultly in carbon bisulphide, carbon tetrachloride, and petroleum ether. Like arsenacetate, it is rapidly decomposed on exposure to moist air, splitting up into benzoic acid and arsenic trioxide.—Pharm. Ztg., li, No. 11 (1906), 117; from Bull. Soc. Chim., *33*, 1139, through Chem. C.-Bl., 1906, i, No. 1.

Lævolactic Acid—Preparation and Properties.—E. Jungfleisch and M. Godchot describe the preparation of pure crystalline lævolactic acid, and give the results of the investigation of some of its properties. They find that solutions of lævo-lactic acid containing lævo-lactyllactic acid can at the same time give solutions of zinc salts of the two acids, the zinc lævo-lactyllactate having a dextrorotatory power considerably greater than that of the zinc lævo-lactate. These facts, which are analogous to those which have been observed for dextro-lactic acid, may have an influence on the exact determination of the nature of lactic acids resulting from numerous microbe fermentations.—Chem. News, March 30, 1906, 153; from Compt. rend., *142*, No. 9 (Febr. 26, 1906).

Lactic and Succinic Acids—Separation.—Guerbet recommends a method for the separation of lactic and succinic acid from each other, which depends upon the solubility of barium lactate in alcohol and the complete insolubility of barium succinate in that solvent. The mixture of the two acids is dissolved in hot alcohol and baryta water is carefully added to neutralization. The precipitated succinate is collected on a filter and weighed; the lactate is determined by evaporating the filtrate.—Pharm. Ztg., li, No. 19 (1906), 214; from Journ. de Pharm. et Chim., 1906, xxiii, No. 4.

Benzoic and Salicylic Acids—Detection in Organic Liquids.—Frank X. Moerk recommends the following simple method for the detection of benzoic and salicylic acid in organic liquids, such as milk, grape juice, wines, etc., etc. To 20–50 Cc. of the alcohol-free liquid to be tested, add 10–25 grains sodium chloride, shake thoroughly to saturate the liquid with the salt; then add 1–2.5 Cc. hydrochloric acid (25 per cent.), shake again, filter into a separating funnel and shake out with two or three portions of chloroform (15 to 20 Cc. each time); draw off the chloroform extractions into a flask, recover most of the solvent by distillation, add a few drops of ammonia water to the residual solution in the flask, evaporate to dryness at a low temperature to expel excess of ammonia, dissolve in a little water and test with ferric chloride test solution: Salicylic acid gives a violet color; benzoic acid a salmon-colored precipitate. In testing alcoholic liquids, make faintly alkaline with sodium hydrate, boil to expel the alcohol, cool, acidify slightly with dilute hydrochloric acid, dilute to the original volume and proceed as above.—Proc. Pa. Pharm. Assoc., 1905, 181–182.

Salicylous Acid—Use as Reagent for Acetone in Urine.—Salicylous acid or salicylaldehyde, C_6H_4OHCOH, is now obtainable in a pure state in the market. It is a yellow fluid, sp. gr., 1.165–1.172; b. p. 196° C., sparingly soluble in water, but soluble in all proportions in alcohol and ether. Frommer recommends it for establishing acetonuria as follows: A piece of potassium hydroxide (about 1 Gm.) is placed in a test-tube containing 10 Cc. of the urine to be examined, and without waiting for the solution of the alkali, 10 to 12 drops of the salicylous acid are added, and heat is applied to 70° C. In the presence of acetone a pronounced purple-red ring develops at the point of contact of the liquid and solid alkali; but if the alkali has entered the solution, the entire mixture, passing through yellow-reddish and purple, gradually assumes a carmine-red color. In the absence of acetone there is scarcely any color reaction; nor is the color reaction developed in the presence of acetacetic acid. The reaction is extremely delicate, being distinctly recognized in dilutions as great as 1 p. in 8 million parts.—Pharm. Ztg., li, No. 30 (1906), 341; from E. Merck's Annual Report for 1905.

Salicylic Acid—Detection in Foods, Urine, etc.—On the basis of a critical study of the methods in use for the detection of salicylic acid in food products, urine, etc., E. Spaeth recommends ferric chloride as the most reliable and sensitive reagent, and a mixture of 3 p. of petroleum ether and 2 p. of chloroform as the most efficient solvent for the shaking-out process. The isolation of the salicylic acid from the liquid under examination will succeed in most cases by the simple shaking-out process, observing that twice the volume of solvent to suspected liquid be used. Emulsification rarely results if the shaking is carefully conducted; if it nevertheless occurs it may usually be overcome by gentle heating. In extreme cases it may be necessary to evaporate the liquid under examination to dryness, and to extract it with the solvent named in a Soxhlet apparatus. The solution, however obtained, is then tested by adding to 20 Cc. one or two drops of dilute ferric chloride solution (or ferric alum solution 1 : 100) and 2–3 Cc. of water and shaking the mixture vigorously, when, in the presence of mere traces of salicylic acid, the aqueous layer will assume the characteristic violet color. For quantitative determination the author recommends the method proposed by Freyer as modified by Fresenius–Grünhut.—Pharm. Ztg., li, No. 11 (1906), 118; from Südd. Apoth.-Ztg., 1906, Nos. 2 and 3.

Salicylglycuronic Acid—Formation in the Animal Organism.—A. Baldoni has isolated a new acid from the urine of dogs which had been fed with sodium salicylate, to which he has given the name salicylglycuronic acid. The new acid forms thin, white, silky-glistening needles, melting and becoming brown at 178° C. Its aqueous solution is acid in reaction, but its solution in absolute alcohol is perfectly neutral, and both solutions are without action on polarized light. It reduces Fehling's copper solution, and, in distinction from salicylic acid, it produces a decided blue color with solution of ferric chloride instead of a violet color. This blue color is produced with the new acid even after its solution has been heated for several hours under a reflux condenser, thus indicating its pronounced stability.—Pharm. Ztg., li, No. 20 (1906), 225; from Pharm. Ztg., 1905, No. 98.

Cream of Tartar—Colorimetric Method of Estimating the Presence of Lead.—Numerous prosecutions by public authorities against vendors of cream of tartar on the grounds of its containing more or less lead, has given the incentive to a review of the methods for the estimation of lead in this article by Ernest J. Parry. He submits that unless very tedious methods, quite inapplicable to ordinary work, are used, a colorimetric process, depending on the color developed in alkaline solution by means of hydrogen sulphide, or preferably a solution of sodium sulphide, is by far the best. The process, which is due to Warington, is best applied in the following manner: Ten grams (or less if an abnormally large quantity of lead is found to be present) is dissolved in distilled water with the aid of 25 Cc. of a 10 per cent. solution of ammonia, and the whole made up to 50 Cc. with water. The small amount of insoluble matter may be filtered off, and if the solution has a yellowish tint, this must be allowed for by matching the blank with it before beginning to estimate the lead. A blank experiment is carried out side by side with this, using the same amounts of water and ammonia, and a known quantity of a dilute standard solution of lead acetate or tartrate is added to the liquid (a solution containing 0.1 milligram of lead per Cc. is best) until the addition of a few drops of a 5 per cent. solution of sodium sulphide produces the same depth of color in both tubes. This will allow the lead to be easily calculated. If copper be present 1 Cc. of a 10 per cent. solution of potassium cyanide must be added to each tube, the copper sulphide being dissolved by this means. If iron be present it is necessary to allow the solution to stand all night with potassium cyanide, after being well warmed on a water-bath, since the iron takes a considerable time to dissolve. For the detection of arsenic the author prefers Gutzeit's test.—Chem. and Drugg., Nov. 25, 1905, 838–839.

Antimony Tartrate—A New Crystalline Form.—Bongault obtained a new crystalline antimonyl tartrate by evaporating a solution of antimony oxide in excess of tartaric acid to dryness and thoroughly washing the residue with acetone. It proved to be a compound having the composition $C_4H_3SbO_6$, resulting from the loss of 1½ mol. of H_2O for each atom of antimony, and may be regarded as the anhydride of the well-known antimonyltartaric acid. It forms crystalline scales or rosettes, which are difficultly soluble in water, forming strongly acid solutions which rotate polarized light to the right. It yields antimonylpotassium tartrate (tartar emetic) when saturated with the calculated quantity of potassium bicarbonate, and is readily soluble in solutions of tartaric acid or of potassium tartrate.—Pharm. Ztg., li, No. 29 (1906), 333; from Journ. de Pharm. et Chim., 1906, xxiii, No. 7.

Antimony Tartrate—Formation of its Ethylester.—Bongault obtained the ethylester of the new antimony tartrate above described from the alcoholic washings produced by the removal of the excess of tartaric acid from the reacting mixture. It forms delicate crystalline needles, which are revealed under the microscope to be quite distinct from the tartrate. The formula given by the author for this ethylester in $C_4H_2SbO_6.C_2H_5$. —Pharm. Ztg., li, No. 46 (1906), 512; from Journ. de Pharm. et Chim., 1906, xxiii, No. 10.

Pipitzahoic Acid—Source, Preparation and Medicinal Value.—Although described over twenty years ago (see Proceedings, 1884, 149), pipitzahoic acid, a beautiful golden-yellow substance obtained from the root of a species of *Perezia*, probably *P. adnata*, A. Gray, is again noticed by Dr.

Altamirano, who gives an account of the histological structure of the root from which it is prepared. It is stated in the "Datos para la Materia Medica Mexicana," to be a useful purgative, acting like aloes, but without producing the hæmorrhoidal congestion which characterizes the action of that purgative, and it is said that its use can be continued for a long time without prejudice to the patient. The best method of extracting the acid, of which 5 per cent. can be obtained from the root, is by extracting it with absolute alcohol at 95 per cent., and precipitating the tincture with slightly acidulated water. In this way it is in shining scales of a golden-yellow color, like that of iodide of lea), and free from resinous matter.—Pharm. Journ., Oct. 21, 1905, 553; from Analen del Institute Mexico Nat., *7*, 21–23.

Commercial Tannins—Characters and Variability.—H. Thoms has examined the different forms of commercial tannins, and has been unable to find any that are absolutely ash-free. Some sorts, it is true, contain as little as 0.05 to 0.1 per cent., but he has found as much as 4.1 per cent. in specimens of technical tannin. The water-content is also exceedingly variable. The determinations were made by heating 1 Gm. of the sample in a drying oven at 101° C. for 2 hours. The solubility in water was satisfactory throughout in the pharmacopœial tannins, but remarkable differences were observed on treatment of the tannins with acetic ether. On shaking 20 Gm. of tannin, which completely responded to the requirements of the G. P., with 20 Gm. of acetic ether, the so-called technical tannins in particular left a considerable residue, while the pharmacopœial tannins also showed considerable variation in their solubility in the ether. Only a few of them formed clear or nearly clear solutions after frequent agitation with acetic ether during 48 hours; in most cases there was a considerable residue, and in one case as much as 21.95 per cent. remained undissolved. The author's results lead to the conclusion that the tannins must be among themselves different in composition; but whether the difference observed in their solubility in acetic ether is referable to different forms of anhydrides of the tannin, the author is unable to decide, although it does not appear improbable. As a practical conclusion, however, he points out that a tannin which produces a clear solution with acetic acid, proves also in other respects to be a carefully prepared and relatively pure product.—Pharm. Ztg., l, No. 99 (1905), 1045; from Ber. d. D. Pharm. Ges., 1905, No. 8.

Bistort-Tannins—Characters and Distinctions.—L. F. Ilin has succeeded in isolating two tannins from the alcoholic extract of *Polygonum bistorta* by their different solubility in alcoholic ether. Both tannins are amorphous, soluble in water and in alcohol, and are readily absorbed by hide powder, producing however different colored compounds with it. Both are also very unstable bodies, decomposing even during evaporation on the water-bath. Their distinction further manifests itself by their elementary analysis, cryoscopic determination, relation to polarized light, and their reactions with ferric chloride and lead salts. On the other hand the two tannins yield identical products with melting alkali (gallic acid and phloroglucin) and by dry distillation yield pyrocatechin; while by heating with diluted sulphuric acid both tannins are split into amorphous bodies, insoluble in water, and into gallic acid.—Pharm. Ztg., l, No. 67 (1905), 706; from Prot. der russ. physik.-chem. Ges. 1905.

ORGANIC BASES.

Alkaloidal Chemistry—Progress During the Years 1904 and 1905.—H. M. Gordin continues his review of the progress made in alkaloidal chemistry during the years 1904 and 1905, in the "Pharm. Review" from July, 1905, to June, 1906, inclusive, covering the following subjects: Homochelidonine, isopilocarpine, lupinidine, lupinus alkaloids, morphine, nicotine, papaverine, isopapaverine, pepper, pilocarpine, quinine, ricinine, skimmianine, sparteine, strychnine, thebaine, xanthine bases, and yohimbine, in Nos. 7, 8 and 9, 1905; aconite alkaloids, aconitine, angostura bases, aporeine, berberine, caffeine, calycanthine, cinchona alkaloids, cinchonine, cinchotoxine, codeine, and coniceine, in Nos. 4, 5 and 6, 1906.

Alkaloidal Standardization—Increase in the U. S. P. VIII.—In the course of a review of the methods directed in the U. S. P. VIII for the alkaloidal estimation in drugs and preparations, Prof. W. A. Puckner mentions that while the U. S. P. of 1890 prescribed standards for three alkaloidal drugs, and for six preparations therefrom, the eighth decennial revision of the U. S. P. directs alkaloidal estimations for twenty-one drugs, and for thirty-four preparations made from them. The advanced position which the revision committee has taken in respect to standardization of alkaloidal drugs and preparations is further shown by a glance at the German Pharmacopœia, which went into effect in 1901, and prescribes methods of valuation of six alkaloidal drugs and ten preparations, whilst the British Pharmacopœia of 1898 requires the valuation of only two drugs—opium and cinchona—and the direct valuation of twelve preparations made from these drugs, and from belladonna, ipecac and nux vomica.—Amer. Journ. Pharm., Aug., 1905, 372–376.

Alkaloids.—Determination by the Aid of Potassium Bismuth Iodide—H. Thoms recommends the intervention of potassium-bismuth iodide for the determination of alkaloids. The reagent is prepared as follows: Bismuth subnitrate, 80 Gm., is dissolved in nitric acid, sp. gr. 1.18, 200 Gm. To this is added a strong aqueous solution of potassium iodide, 272 Gm. The greater part of potassium nitrate formed crystallizes out and is separated by decantation. The liquid is then evaporated to 1 liter. To determine the alkaloidal value of

Extract of Belladonna, for example, 2 Gm. of the extract are dissolved in 50 Cc. of water and 10 Cc. of 10 per cent. sulphuric acid; 5 Cc. of the above reagent are then added, with constant stirring. The precipitate formed is immediately collected and washed twice with 5 Cc. of 10 per cent. sulphuric acid. The drained filter with the precipitate on it is then placed in a glass-stoppered flask and treated with 0.3 Gm. of sodium sulphite and 50 Cc. of caustic soda solution, 15 per cent. The mixture is well agitated for some time to liberate the alkaloids; 15 per cent. of salt and 100 Cc. of ether are added, and the whole well shaken up to dissolve out the alkaloids. After separation 50 Cc. of the ether layer is pipetted off, in which the amount of alkaloids is determined in the usual manner, by titration with $\frac{N}{100}$ HCl solution, with iodeosin indicator. The weight of total alkaloid present is calculated as atropine by multiplying the number of Cc. of acid used up by 0.289.—Pharm. Journ., July 15, 1905, 69; from Journ. de Pharm. et Chim., 1905, xxi, 605.

Alkaloids—Quantitative Determination with Potassium-Bismuth Iodide. The precipitation of alkaloids by potassium-bismuth iodide, which has been applied to the quantitative determination of atropine and strychnine by Thoms and his collaborators, has also been found available by D. Jonescu for the estimation of quinine, caffeine and antipyrine with reasonable accuracy.

Antipyrine is estimated as follows: A solution in 10 per cent. sulphuric acid is precipitated with potassium-bismuth iodide, the precipitate is collected on a filter, washed with weak acidulated water, and while still moist introduced together with the precipitate into the separatory cylinder, and decomposed with alkali by vigorous shaking for an hour. For this purpose the precipitate from 2 Gm. of antipyrine required 20 Gm. of sodium carbonate and 60 Cc. of 10 per cent. solution of sodium hydroxide. The liberated antipyrine was shaken out of the alkaline solution with chloroform, the chloroform evaporated, and the residue recrystallized from benzol. Its melting-point was found to be 112.5° C.—Pharm. Ztg., li, No. 36 (1906), 403; from Ber. d. D. Pharm. Ges. 1906, No. 4.

Alkaloids—New Reagents for their Micro-chemical Determination.—M. Herder finds the calcium- and barium-mercuric iodides very serviceable for the micro-chemical determination and localization of alkaloids. These double salts, while producing amorphous precipitates with alkaloids in aqueous or alcoholic solution, produce distinct and characteristic crystalline precipitates if applied in chloral solution of 30–40 per cent. strength—the chloral solution having the additional advantage of rapidly penetrating the section and clearing up the microscopic field. In conducting the examinations of sections, which are not to be sliced too thin, parallel tests are made with both of the double salts named, and these are compared with a blank test made on a section which has previously been freed of its alkaloid content by treatment with alcohol containing 5 per cent. of tartaric acid. In this way the author examined the rhizomes of *Fibraurea chloroleuca* for berberine; the rhizomes and rootlets of *Hydrastis canadensis* for hydrastine, canadine and berberine; the seeds of *Strychnos nux-vomica* for strychnine and brucine; the bark of *Cinchona ledgeriana* for quinine and cinchonine; the fruits of *Conium maculatum* for coniine. Referring to the original paper for the details of conducting these examinations, it may suffice here to state that the results obtained were in the main encouraging, notwithstanding that the pure alkaloids reacted far more sensitively with the two double salts in aqueous solution than with the same dissolved in 30 per cent. chloral hydrate solution. In the latter solution the limits of recognition are as follows:

Berberine: An almost immediate golden-yellow, crystalline precipitate; with calcium-mercuric iodide in solution, 1 : 65000; with barium-mercuric iodide, 1 : 80000.

Hydrastine: An immediate white, apparently crystalline, precipitate, but largely consisting of aggregations of smaller particles of the precipitated base; with the calcium salt in solutions of 1 :2000; with barium salt, 1 :2400.

Strychnine: Small feathery formations along with fine columnar single crystals, frequently forming rosettes; with the calcium salt [in solutions of 1 : 40000; with barium salt, 1 : 43000.

Brucine: Small scales, changing on prolonged standing to twisted band-shaped crystals; with the calcium salt in solutions of 1 :10000; with barium salt, 1 :11000.

Quinine: A precipitate at first exhibiting no characteristic form, but on prolonged standing developing into stellate, often feathery aggregations of small crystals; with the calcium salt in solutions of 1 : 20000; with barium salts, 1 : 25000.

Cinchonine: A precipitate similar to that from quinine; with the calcium salt in solutions of 1 :10000; with barium salt, 1 :12000.

Coniine: A precipitate, at first amorphous, but on prolonged standing converted into neat, cubical or columnar crystals, usually disposed in small aggregations.—Arch. d. Pharm., *244*, No. 2 (1906), 120.

Organic Bases—Formation of Double Salts with Palladium Chloride and Bromide, which see under "Inorganic Chemistry."

Organic Double Salts of Bismuth Chloride—Preparation and Characters.—L. Vanino and F. Harti describe a number of new organic double salts of bismuth chloride, which they obtained by dissolving the bismuth chloride in the smallest possible quantity of the solvent most suitable for the solution of the organic base with which it is to be combined—acetone, alcohol or ether—clarifying the hot solution by the addition of a little hydrochloric acid, filtering, and adding the hot filtrate with constant stirring to the concentrated solution of the organic base, in molecular proportion. The precipitate obtained was then drained on the suction filter and dried on a clay-tile.

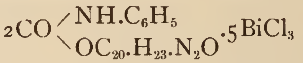
Diphenylamine-bismuth chloride, $NH(C_6H_5)_2BiCl_3$, obtained with the acetone solution of diphenylamine, forms a white crystalline precipitate, which after drying, on prolonged exposure to air, becomes yellow, and finally green. It is insoluble in acetone, ether or alcohol.

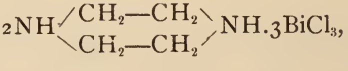
p-Nitrosodiphenylamine-bismuth chloride, $(C_6H_5)_2N.NO.BiCl_3$, is obtained as a black crystalline precipitate from an acetone solution of nitrosodiphenylamine. It is insoluble in acetone, ether or alcohol, but readily dissolved by concentrated hydrochloric acid.

2-Nitrosodimethylaniline–3–bismuth chloride, $2C_6H_4.NO.N(CH_3)_2.3BiCl_3$, produced from the acetone solution of nitrosodimethylaniline, is obtained as a yellow-brown precipitate, and is insoluble in acetone, ether, alcohol, chloroform, or benzol, but is soluble in hydrochloric and nitric acids.

Aldehyde-ammonia-bismuth chloride. $(CH_3.CH.NH)_3.3BiCl_3$, is obtained from the solution of methylamine chlorhydrate in absolute alcohol, forming a precipitate of handsome, shining, white crystals, which are washed with alcohol and dried. The salt is decomposed by water, BiOCl being precipitated.

Rheumatine-bismuth chloride, $C_{34}.H_{34}.N_2.O_7.2BiCl_3$, is obtained from an acetone or alcohol solution of rheumatine ($C_6H_4OHCOO.C_{20}H_{23}N_2O.-C_6H_4OHCOOH$). It forms white crystals, insoluble in alcohol, ether, acetone, benzol, etc., but soluble in hydrochloric and in nitric acids.

Chinaphenin-bismuth chloride,  $2CO\left\langle\begin{matrix}NH.C_6H_5\\OC_{20}.H_{23}.N_2O\end{matrix}\right..5BiCl_3$ is obtained from chinaphenin in acetone solution in the form of a lumpy, deep yellow precipitate, which by gentle shaking is divided into a fine powder. It is insoluble in alcohol, acetone, etc., but readily soluble in hydrochloric and nitric acids.

Piperazine-bismuth chloride,  $2NH\left\langle\begin{matrix}CH_2-CH_2\\CH_2-CH_2\end{matrix}\right\rangle NH.3BiCl_3$, is obtained from the acetone solution of piperazine, forming a white, lumpy precipitate, which, as in the preceding case, is easily shaken to a fine crystalline powder. It is insoluble in organic solvents, but is readily soluble in dilute hydrochloric acid. On boiling it with water it is decomposed, BiOCl being precipitated.

None of these organic double salts have as yet been subjected to pharmacological experiments.—Arch. d. Pharm., *244*, No. 3 (1906), 216.

Aconitine and Aconine—Historical Review.—Dr. Heinrich Schulze contributes an exceedingly comprehensive review of the investigations that have been made on the aconite alkaloids, since the Swiss apothecary Peschier, in 1820, isolated an alkaloid from the leaves of *Aconitum Napellus* to which he gave the name aconitine. After supplementing this highly interesting historical review with a resumé of the facts that are accepted modernly as the outcome of the mass of researches which have been conducted during a period covered by almost a century, the author, in a second portion of this valuable paper deals with his own experiments concerning the constitution of aconitine and its relation to aconine. Among other interesting results obtained by the author, those determining the identity of the aconitine obtained by Dunstan from English aconite tubers with the German crystallized aconitine are of particular importance from a pharmacological point of view.—Arch. d. Pharm., *244*, Nos. 2 and 3 (1906), 136 and 165.

Aconitine—New Reaction.—E. P. Alvarez finds that if 0.0005 to 0.002 Gm. of pure crystalline aconitine is mixed in a porcelain crucible with 5 to 10 drops of pure bromine, the mixture heated gently on a water-bath, then 1–2 Cc. of fuming nitric acid added, and evaporated on the water-bath, adding, as soon as the acid has become decolorized, a small quantity of bromine, a yellow oxidation product is obtained. On treating the residue with 0.5 to 1 Cc. of a saturated solution of potassium hydroxide in ethyl alcohol (sp. gr. 0.796) and evaporating to dryness, a more or less red to brown residue, depending on the amount of aconitine, is obtained. If now the crucible is allowed to cool, the residual content well triturated, and 5 to 6 drops of a 10 per cent. aqueous solution of cupric sulphate added, an intensely green solution is produced, which is regarded as quite characteristic.—Pharm. Ztg., li, No. 1 (1906), 10; from Gaz. Chim. ital., 1905, No. 429.

Atropine—Resistance to Putrefactive Processes.—In an address delivered before the German Society of Naturalists which has just appeared in print, C. Ipsen calls attention to the extraordinary resistance of atropine to the influence of putrefactive processes. Atropine, which in quantities of 0.03 Gm. to 300 Cc. of blood, urine, beer had been exposed to decomposing influences, a portion of the time in the incubator at 30° C., was readily detected by the usual tests, even after the lapse of 12 years. In a cadaver, exhumed after having been buried three years, it was determined in the intestines with ease and absolute certainty. It appears to be rapidly absorbed in all parts of the animal economy, being distributed through the medium of the blood circulation, the muscles absorbing the smallest proportions of the poison. Its elimination from the body begins promptly, and is effected through all the excretory channels, continuing in one case cited 4 to 5 days, in another two weeks, before completion.—Pharm. Ztg., li, No. 11 (1906), 118; from Ztschr. f. angew. Chem., 1906, No. 4.

Caffeine—Estimation in Green Coffee.—C. Wolff recommends the following simple method for the estimation of caffeine in green coffee: The finely powdered coffee is extracted with chloroform in a Soxhlet apparatus for 6 to 8 hours, and the caffeine is then calculated from the amount of nitrogen obtained from the extraction residue by the well-known method of nitrogen determination. Experiments have convinced the author that the chloroform extracts no constituent of the coffee other than caffeine that contains nitrogen. The method is, however, not applicable to roasted coffee.—Pharm. Ztg., li, No. 46 (1906), 514; from Ztschr. f. öffentl. Chem., 1906, No. 10.

Cocaine—New Reaction.—C. Reichard describes a new reaction of cocaine which is quite characteristic and may serve to differentiate this alkaloid from morphine. If a mixture of α-nitroso-β-naphthol, hydrochloric acid and nickel sulphate is heated and then filtered, a dark-green liquid is obtained. A drop of this liquid is spread on a porcelain surface so as to form a uniform dark-green spot about 1 Cm. in diameter; a crystal of cocaine is placed in the center of this spot, and, after allowing to stand a few minutes, heat is carefully applied. The spot thus treated assumes a yellow-green color in the dried margin, leaving a moist central spot, which, when heated somewhat higher, without further precaution, assumes a magnificent light-blue color surrounding a shining drop of resin-like matter. This color disappears again several minutes after cooling, but may be re-developed by heating as often as may be desired for days following. The reaction may also be obtained with a solution of nickel sulphate, without the addition of the nitroso-naphthol, but is not so distinct. If the test is repeated with morphine, either as described or variously modified, no reaction whatever is obtained. The test may therefore serve for the differentiation of the two bases.—Pharm. Ztg., li, No. 15 (1906), 168.

Cocaine Formate—Preparation and Characters.—F. Vigier has obtained cocaine formate, having the formula, $C_{17}H_{21}NO_4.CH_2O_2$, by suspending cocaine in water, and adding crystallizable formic acid in molecular proportion. A neutral solution is thus slowly formed, which, on evaporation at a low temperature, becomes yellowish and syrupy, and on cooling deposits long, silky-glistening, white crystals, which are rapidly washed with cold water and dried. The mother liquor gradually acquires a darker color, and yields crystals which are not so perfect in form. Cocaine formate melts at about 42° C., but soon decomposes afterwards. It is faintly bitter, is soluble in 41 parts of cold water, but decomposed when its solution is heated to 90° C., free cocaine being precipitated. It is freely soluble in absolute alcohol, difficultly in ether and in chloroform, and insoluble in olive oil and vaselins.—Pharm. Ztg., li, No. 11 (1906), 118: from Journ. de Pharm. et Chim., 1906, xxiii, No. 3.

Cocaine Hydrochloride—Spontaneous Decomposition by Age.—P. Bretean states that a specimen of cocaine hydrochloride, fifteen years old, which had evidently decomposed, was found to have been converted into methyl benzoate, free benzoic acid, and ecgonine hydrochloride. This decomposition is attributed to the trace of water contained by the lamellar form of cocaine hydrochloride. The perfectly anhydrous salt which has not this structure should alone be used, and this must be stored in perfectly dry bottles, protected from moisture and light.—Pharm. Journ., June 30, 1906, 757; from Journ. de Pharm. et Chim., 1906, *23*, 471.

Cocaine Hydrochloride—Practical Methods of Testing.—H. Wippell Gadd and Sydney C. Gadd find Maclagan's test for freedom from other coca alkaloids in cocaine hydrochloride to be the most generally useful, and apply this test as follows: Dissolve 1 grain of cocaine hydrochloride in 2 fl. ozs. of distilled water and add three drops of solution of ammonia. Stir briskly with a glass rod. If within a few minutes there is no precipitate, add a single drop more of solution of ammonia, when a crystalline precipitate should be thrown down, leaving no turbidity in the supernatant liquid.

Another easily-applied test is that known as the "permanganate test," which the authors recommend to be carried out as follows: Dissolve 1 grain of cocaine hydrochloride in 1 fluidounce of distilled water, acidulate the solution with 2 drops of dilute sulphuric acid and add 3 minims of a solution of 1 grain of potassium permanganate in 2 fl. ozs. of water. The color should not disappear within an hour.—Pharm. Journ., Dec. 30, 1905, 901.

Conium Alkaloids—Method of Separation.—J. von Braun describes the method by which he effected the separation of the conium alkaloids, namely, *coniine*, *methyl coniine*, *γ-coniceine*, *conhydrine* and *pseudo-conhydrine*, as follows: The major portion of the coniine, which forms the chief constituent, was separated by distillation; the remaining mixture was then fractionated up to 190° C., whereby the conhydrine (m. p. 118°) remained behind as an undistilled residue. The lower fractions were next benzoylated in alkaline solution, and the resulting oil, after dissolving in ether, was extracted with acid to remove the methyl coniine. The ethereal solution was then concentrated and treated with ligroin to precipitate the benzoyl-amino-butyl-propyl-ketone, which is formed by the action of benzoyl chloride upon γ-coniceine; the mother liquors were then distilled again, and yielded benzoyl coniine (b. p. 203°–204° C. at 16 Mm. pressure) and some more of the benzoyl-amino-ketone. Starting from 104 Gm. of material the author was able to recover 1 Gm. conhydrine, 7 Gm. methyl coniine, 52 Gm. amino-ketone, corresponding to 26 Gm. coniceine, and 124 Gm. benzoyl-coniine, corresponding to 68 Gm. coniine—total 102 Gm. The coniine recovered from the benzoyl derivative proved to be a mixture consisting chiefly of *l*-coniine with a little *d*-coniine. The substance described above as a methyl coniine has $[a]_D + 35.66$ at 24° C. It appears to be a simple substance, and is therefore possibly isomeric with the N-methyl coniine already known. It yields a picrate melting at 114°, a platinichloride melting at 195°, and an aurichloride melting between 80° and 90° C.—Pharm. Journ., Dec. 30, 1905, 909; from Ber. d. D. Chem. Ges., 1905, *38*, 3108–3113.

Cornutine—Determination in Ergot, which see under "Materia Medica."

Cuspareine—A New Angostura Base.—H. Beckurts and G. Frerichs, having succeeded by a simple method to separate the four crystalline bases of angostura bark from the little known amorphous bases, subjected the latter to further treatment and succeeded in isolating a fifth crystalline base, to which they have given the name "cuspareine," the other four being known as cusparine, cusparidine, galipine and galipidine, respectively. Cuspareine forms white needle-shaped crystals, melting at 54° C. and has a composition corresponding to the formula $C_{34}H_{36}N_2O_5$. Its characters are quite distinct from the other crystalline bases. It is incapable of forming salts with acids, and although soluble in 10 per cent. hydrochloric acid, it may be completely removed from such solution by shaking out with ether, while on evaporating its solution in dilute hydrochloric acid, the acid is volatilized completely, leaving the alkaloid in the form of a varnish-like mass, but otherwise entirely unchanged. Indeed, cuspareine shows remarkable stability at elevated temperatures, and may be volatilized almost unchanged at about 300° C. under ordinary conditions of atmospheric pressure. From the amorphous bases, with which it is associated, it is separated by shaking out with cold petroleum ether having a low boiling point, which readily dissolves the cuspareine while in an amorphous condition, but does not dissolve the true amorphous bases to any extent. In its chemical characters cuspareine appears to be closely related to the amorphous bases, from which it is distinguished mainly by its crystallinity, and by being somewhat weaker in basic properties.—Arch. d. Pharm., *243*, No. 6 (1905), 470–474.

Hordenine—An Aldehyde from Barley Malt.—Léger has isolated a new alkaloid from malted barley, which he has named hordenine. It has the composition $C_{10}H_5NO$, and is consequently isomeric with ephedrine, but must be regarded as a tertiary base. Hordenine crystallizes in rhombic prisms, melting at 177.8° C., and is neutral to polarized light.—Pharm. Ztg., li, No. 19 (1906), 214; from Journ. de Pharm. et Chim., 1906, xxiii, No. 4.

Hordenine—Pharmacology.—M. L. Camus has investigated the pharmacologic activity of the alkaloid hordenine, which Léger has recently isolated from the germinating seeds of barley. It is a white crystalline alkaloid, and produces a sulphate which is freely soluble in water. The sulphate is only slightly toxic, the minimum lethal dose for a dog is 0.3 Gm.

per kilogramme by intravenous injection. A dose of 2 Gm. per kilogramme after ingestion by a dog proved fatal. When death ensues it is due to stoppage of the respiration. Experiments dealing with the action of hordenine sulphate on the circulation are also described, and it is found that the action is in accord with the general law that a substance which stimulates in small doses produces paralysis in large doses. In small doses this alkaloid stimulates the pneumogastric system, slows the heart and increases the amplitude of the pulsations. In large doses these actions are completely reversed. The introduction into the stomach of 1 Gm. of hordenine suphate per kilogramme of animal (dog or rabbit) produces for some hours a rise in blood-pressure and accelerates the action of the heart.—Pharm. Journ., Mar. 31, 1906, 387; from Compt. rend., Jan. 8 and 22, 1906.

Morphine—Oxidation by Gum Arabic.—Bourquelot has shown that mucilage of acacia possesses the property of oxidizing a number of organic substances, and amongst them morphine, the oxidation product being oxymorphine. On account of the importance of the subject, R. Firbas considered it desirable to ascertain the extent to which this oxidation is effected. Experiments indicate that while oxidation is undoubtedly effected in solutions of morphine it is inconsiderable unless the mucilage is present in large quantity and the action is continued for some days. A 1 per cent. solution of morphine hydrochloride was made; 40 Gm. of this yielded 0.299 Gm. of morphine. After the addition of 5 per cent. of mucilage of acacia the quantity fell to 0.291 in one day, and with 30 per cent. of mucilage to 0.271 in twenty-one days. The presence of so much gum made the assay somewhat more difficult. Dry powdered gum exercised no action upon the morphine in powdered opium or upon extract of opium.—Pharm. Journ., Febr. 17, 1906, 167; from Pharm. Post, *38*, 735.

Morphine—Toxicological Determination.—The difficulty of isolating morphine in the usual course of toxicological examination is attributed to the fact that the alkaloid forms in the body a sulpho-derivative which is not removed by the method of Stas Otto or the processes generally followed. Gérard, Deléarde and Ricquet, by the following method, have succeeded in obtaining evidence of morphine and oxymorphine from the organs of a rabbit, into which, six hours before being killed, 0.01 Gm. of morphine hydrochloride had been injected. The organs were pulped, treated with an equal weight of water, then acidified with pure hydrochloric acid in the proportion of 1 part by weight of acid for each 10 parts of the organs. This large excess of acid is necessary to liberate the morphine and oxymorphine from the organic compounds formed in the body. The mixture is then digested for two hours on the water-bath, neutralized with ammonia, and extracted three times with amyl alcohol saturated with ammonia. The amylic alcohol extract is set aside, the aqueous portion evaporated to dryness, and rubbed down with sand. The powder is again extracted with ammoniated amyl alcohol, and the solution added to the amylic solutions at first obtained. The bulked amyl alcohol extract is then shaken out with water acidified with hydrochloric acid, and separated; the acid aqueous extract is rendered alkaline with ammonia, and again shaken out with ammoniated amyl alcohol. On separating this, and distilling off the solvent, morphine and oxymorphine may be detected in the residue. This is best accomplished with Marquis's reagent, a mixture of strong sulphuric acid, 30 Cc., and formalin, 20 drops. A little of the amyl alcohol residue is spread on the sides of a white porcelain capsule, and a few drops of the reagent allowed to flow over it. Morphine gives a red-violet color, oxymorphine a green tint; with a mixture of both, both colors are obtained. If the alkaloidal residue is sufficient in quantity, morphine and oxymorphine may be separated by converting the bases into sulphates, oxymorphine sulphate being nearly insoluble in water. The fact that some investigators have generally succeeded in isolating only oxymorphine is considered to be due to the use of insufficient acid to decompose the morphine sulpho-compound formed.—Pharm. Journ., Nov. 4, 1905, 617; from Journ. de Pharm. et Chim., 1905 (6), *21*, 49.

Morphine—New Reaction.—D. Radulesen describes the following color reaction, which is stated to be characteristic of morphine, not being afforded by any alkaloid or other substance in the author's possession, except an old specimen of lactucarium of doubtful purity: To a filtered decoction of the substance to be examined, as free from color as possible, a crystal of sodium nitrite is added with sufficient acid to liberate the nitrous acid. Before effervescence has ceased, an excess of caustic potash solution is added. In the presence of morphine a pale rose to ruby-red tint will be developed, according to the amount of morphine present. The acid employed is immaterial, and any alkali may be employed to neutralize it. The red color is not removed on shaking with immiscible solvents; it is not discharged by boiling in the alkaline solution, but is decomposed by strong acids, so that it is not reproduced on again rendering the liquid alkaline. It is also decomposed in the presence of much alcohol.—Pharm. Journ., April 28, 1906, 501; from Bull. Soc. Scient. d. Bucurosci, 1905, *14*, 602.

Morphine—Modification of the Formaldehyde Reaction.—C. Reichard recommends stannous chloride in place of sulphuric acid in carrying out the well-known formaldehyde test for morphine. The alkaloid (in saline combination) is moistened with a few drops of formaldehyde, allowed to dry superficially, so that the odor of formaldehyde is still distinctly perceptible, and is treated with a drop of solution of stannous chloride, stirred with a glass rod, and carefully heated. In the presence of morphine, a magnificently violet spot is gradually developed, which, even with very small quantities is so intense as to appear almost black, while moist, and which retains an intense violet color for an unlimited period after drying. If alkaloid is used for the test, it must first be neutralized with hydrochloric acid.—Pharm. Centralh., xlvii, No. 13 (1906), 247.

Apomorphine Hydrochloride—Solubility.—D. B. Dott calls attention to a discrepancy in the solubility of apomorphine hydrochloride as stated by different authorities. These discrepancies have no doubt chiefly arisen from varying methods of determination. High results may be obtained, for instance, by supersaturating at a higher temperature and allowing to cool to the required temperature; low results by previously exposing the salt to the heat of a water-bath to get rid of hygroscopic moisture, thereby rendering it slightly basic. At 60° F. the (normal) salt requires 59 parts of water; Squire gives 1 in 56 to 60. At 25° C. its solubility, according to the U. S. P., is 1 in 39.5 parts of water; this is not correct; it should be 1 in 49, or thereabout. In 90 per cent. alcohol, apomorphine hydrochloride is soluble to the amount of 1 in 51 parts. From the dispenser's point of view, however, the solubilities of a substance should be determined by shaking the finely-powdered substance with the solvent at 60° to 65° F. for a reasonable length of time.—Pharm. Journ., Mar. 24, 1906, 345.

Nicotine—Optical Rotation, Etc., of the Pure Base.—F. Ratz has determined the optical rotation of pure nicotine at 20° C. to be $a_D = 169.54$; its identity, $d_4W = 1.00925$; its boiling-point at 720 Mm. $= 246.2°$. Absolutely pure nicotine has hitherto not been obtained. The author has succeeded, however, by converting the nicotine into the zinc chloride double salt, fractional crystallization, and splitting off the nicotine from the purified salt by means of potassium hydroxide, with exclusion of solvents.—Pharm. Ztg., l, No. 80 (1905), 843; from Œsterr. Chem. Ztg., 1905, No. 18.

Meta-Nicotine—Reduction.—Emil Maas, by the reduction of metanicotine with sodium and absolute alcohol, adding water when the reduction was complete, and removing the alcohol and other volatile impurities by distillation, obtained

Hexahydrometanicotine in the form of a brown oil, from which the pure substance, to the amount of 82 per cent., was obtained by solution in ether and subsequent distillation. It forms a clear, colorless oil, having the sp. gr, 0.944 at 15° C., and boiling at 251° to 252° C.—Pharm. Journ., July 29, 1905, 116; from Ber. d. D. Chem. Ges., 1905, *38*, 1831.

Physostigmine—Constitution and Decomposition Products.—According to the studies of W. Heubner the constitution of physostigmine, $C_{15}H_{21}N_3O_2$, may be explained by the formula $CH_3NH - CO - NH - C_{13}H_{15}N - OH$. By prolonged treatment with solution of sodium hydroxide, physostigmine is completely decomposed and converted into

Eserodine, $C_{13}H_{18}N_2O$, according to the following equation: $C_{15}H_{21}N_3O_2 +$

$H_2O = CO_2 + CH_3NH_2 + C_{13}H_{18}N_2O$. This base is soluble in ether and is inert. If the solution of the pure base, heated at 80° to 90° C., is then treated for three days with a current of air and oxygen, it is converted into

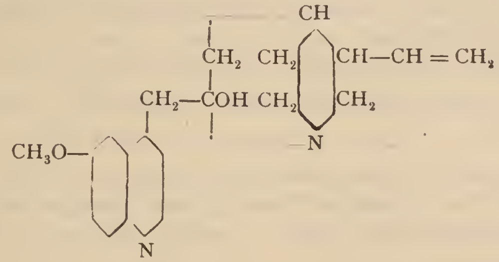
Rubreserine, $C_{13}H_{16}N_2O_2$, according to the equation: $C_{13}H_{18}N_2O + O_2 — C_{13}H_{16}N_2O_2 + H_2O$. Rubreserine, in turn, is readily transformed during evaporation of its solution on prolonged boiling into

Physostigmine Blue, the chemical nature of which requires further examination.—Pharm. Ztg., l, No. 97 (Dec. 6, 1905), 1019; from Arch. f. exp. Pathol., 1905, *53*, No. 4.

Eserine Sulphite—A Permanently Colorless Salt.—E. Merck has patented a process for preparing eserine sulphite, a salt that does not change and become colored on keeping. Eserine is dissolved in ether, and the solution is shaken out with a calculated quantity of freshly-distilled aqueous sulphurous acid. The aqueous solution is evaporated, and the dry residual salt pulverized when cold. Obtained in this way, eserine sulphite is a white, apparently amorphous powder, containing about 13.4 per cent. of sulphurous acid, and is readily soluble in water and in alcohol.—(D. R. P. No. 166310); Pharm. Ztg., li, No. 7 (1906), 77.

Metapilocarpine—A New Modification of Pilocarpine.—A. Pinner observes that if pilocarpine hydrochloride is kept at a temperature slightly above 200° C. for a quarter of an hour, and then precipitated from aqueous solution by 50 per cent. potassium carbonate, it yields "isopilocarpine." If, however, the hydrochloride is heated for one or two hours to 225°–235° C., and then treated as before, the precipitate consists chiefly of a substance which is insoluble in chloroform, for which the name "metapilocarpine" is proposed. Metapilocarpine differs from pilocarpine and isopilocarpine in the greater solubility of its salts and in the crystalline form of its platinum salt, which decomposes at 200° C.; moreover, the free base, which has the formula $C_{11}H_{16}N_2O_2 + H_2O$, is hydrolyzed by boiling caustic potash as readily as the methyl derivatives of the two other varieties, but unlike these loses only one nitrogen atom in the form of methylamine, leaving nitrogenous acids, whereas pilocarpine and isopilocarpine yield acids free from nitrogen.—Pharm. Journ., Aug. 26, 1905, 280; from Ber. d. D. Chem. Ges., 1905, *38*, 2560.

Quinine—Constitution and Historical Summary.—Benjamin L. Murray concludes a very elaborate study of the literature on the construction and history of quinine, by the following resumé: Quinine is the principal alkaloid in cinchona bark. It is associated with other alkaloids, and closely resembles, chemically, another of the important ones, cinchonine. It is readily converted into its isomers, some of which are isoquinine, pseudoquinine, niquine, and quinicine. It is unsaturated, easily adding two halogens, less easily two more. It contains a methoxy and a hydroxyl group; also an unsaturated side-chain. It is in one-half of its molecule a quinoline derivative, containing methoxy in para position and another group in gamma position. The second half is a piperidine ring with a side-chain of two carbon atoms at beta, and one of three carbons at gamma. The three-carbon chain contains the hydroxyl group and connects the two half molecules; and is thought also to be further linked to the piperidine nitrogen at its hydroxylic carbon. Its probable graphic formula, as constructed by Miller and Rohde and others after consideration of the above facts, is given as follows:



Quinine has been used since the year 1638, but it was not separated in a pure condition and properly characterized until 1820. Its formula was established by Regnault in 1838, and later by Strecker in 1854. Isomers were discovered as early as 1853, when Pasteur prepared quinicine. In 1858 hydroxyl was found, in 1869 quitenine prepared, in 1878 the quinoline group found, and in 1879 the gamma linking of the two half-molecules established. The real progress of investigation dates from this time. In 1880 the methoxy group was discovered, in 1884 quinene prepared, in 1887 addition compounds thoroughly investigated, in 1889 cincholoiponic acid prepared from quinene, and in 1891 quinine prepared synthetically and isomers investigated. In 1892 it was determined that the nitrogen of the second half-molecule is the more basic; in 1893 both nitrogens were found to be tertiary; meroquinine, loiponic acid and ortho positions of side-chains were all established for quinine in 1894. The last steps were taken in 1900, when quinotoxine phenylhydrazone was prepared; and quinine was reduced by electrolytic means in 1902.

A chronological bibliography is appended to this very valuable paper, which may be consulted in the original in Merck's Rep., Aug., Sept. and Oct., 1905, 237, 267 and 301.

Pure Quinine Salts—Preparation by the Intervention of Ammonium Salts.—P. Guigues recommends the preparation of pure quinine salts by a method which is based upon the superior affinity of sulphuric acid and ammonia, and consequent formation of ammonium sulphate when the ammonium salt of the required acid is mixed with a solution of quinine sulphate. Thus, if quinine sulphate is dissolved in water by the aid of the required acid, the solution neutralized with ammonia, and ammonium sulphate solution is added, until the fluorescence of the solution disappears, the required salt will crystallize out on standing in an approximately pure condition. In practice it is found that 10 Gm. of quinine sulphate require 10 Gm. of the desired acid or its equivalent as ammonium salt. The quinine sulphate is mixed with 50 to 60 times its weight of water, the mixture dissolved in the acid, neutralized with very dilute ammonia, and the ammonium sulphate solution is then added as above indicated. In this way the author has obtained the acetate, citrate, hydrochloride, lactate, phosphate, tartrate, and valerianate in a practically pure condition. If the chemically pure salt is desired, it is recommended to dissolve the pure base in excess of the desired acid, to neutralize the solution with ammonia, to precipitate with ammonium sulphate solution, and to wash the precipitate with faintly ammoniacal water.—Pharm. Ztg., l, No. 97 (1905), 1019; from Journ. de Pharm. et Chim., xxii (1905), No. 7.

Quinine Formates—Preparation and Properties.—H. Lacroix has obtained and describes neutral and basic quinine formates, which have the advantage over other quinine salts in containing the largest quantity of the base in the molecule.

Neutral Quinine Formate is formed when 1 mol. of quinine is dissolved in 2 mol. of pure formic acid. It crystallizes in long, shining needles, which are soluble in water, producing an acid solution. The salt loses a part of the formic acid at 50° C., but does not melt completely below 95° C.

Basic Quinine Formate is obtained by triturating 1 mol. of the base with water at 50° C. and adding 1 mol. of pure, crystallizable formic acid. If the right proportion of water is used the salt crystallizes out on cooling in form of handsome white needles, which are stable, and melt at 132° C. The salt is less bitter in taste than the sulphate, and dissolves in 20 parts of water, this constituting it the most soluble in water of all neutral quinine salts. Its aqueous solution is not fluorescent. While readily soluble in alcohol, it is almost insoluble in ether.—Pharm. Ztg., l, No. 64 (1905), 673; from Journ. de Pharm. et Chim., xxii, No. 3 (1905).

Quinine Formates—Quinine Content.—The claim of H. Lacroix that the quinine formates have the advantage over other quinine salts in containing the largest percentage of quinine is contradicted by Dr. B. Merck by simple molecular calculation. Thus basic quinine formate, $C_{20}H_{24}N_2O_2$.-HCOOH, with a molecular weight of 370, contains 87.56 per cent. of pure alkaloid, whilst basic quinine hydrochloride, $C_{20}H_{24}N_2O_2.HCl$, with the molecular weight of 360.5, contains 89.87 per cent. of the pure base.—Pharm. Ztg., l, No. 67 (1905), 706.

Quinine Acid Hydrochloride—Variation of the Commercial Salt from the B. P. Standard.—William Garsel in a recent examination of quinine acid hydrochloride found a noteworthy difference between the characters of different samples. The B. P. gives the formula $C_{20}H_{24}N_2O_2.2HCl.3H_2O$, corresponding to 11.98 per cent. of water of crystallization, and requires that at 100° C., not more than 12 per cent. of water should be lost. No minimum figure is given, and thus any salt from the anhydrous up to one containing 3 mol. of water is admitted. Five samples examined, on heating to constant weight at 103° to 105° C., showed the following losses respectively: 0.3, 3.3, 1.8, 0., and 0.4. These experiments show that the quinine acid hydrochloride of commerce is practically an anhydrous salt, and therefore does not conform to the B. P. formula. The author, furthermore, finds that the pharmacopœial tests for the presence of neutral hydrochloride in this salt should be made more precise, and that both maximum and minimum figures be given, with particular instructions as to the indicator to be used.—Trans. Brit. Pharm. Conf., (Yearbook of Pharm.), 1905, 419–421.

Quinine Sulphate—Cause of Radiation and Luminosity.—A. Kalähne has made an interesting inquiry into the causes of the luminosity and radiation of quinine sulphate, displayed under certain conditions. He finds that when this salt is heated to from 100° to 180° C., and is again cooled, it becomes transiently luminous, while the surrounding air is ionized. The cause of this radiation is the expulsion and re-absorption of water, not the the change of temperature, and it is defined by the author as being a process of dissociation dependent on the temperature and water-vapor tension of the surroundings. The intensity of the radiation depends on the rapidity of reaction, which may be regulated at will. Penetrating rays are not emitted during the luminosity, nor is it decided whether they are *a*-rays or ultra-violet rays.—Pharm. Ztg., li, No. 11 (1906), 118; from Ann. d. Physik, *18*, 450.

Quinine Sulphate—Modification of B. P. Test for Cinchonine and Cinchonidine.—H. Wippell Gadd and Sydney C. Gadd recommend the following practical modification of the B. P. test for cinchonine and cinchonidine: Dissolve 60 grains of the sample in 4 fl. ozs. of boiling water in a 10-oz. flask. Allow the solution to cool slowly to 122° F. (50° C.), with frequent stirring. Separate by filtration the purified quinine sulphate which has crystallized out. Concentrate the filtrate by evaporation until it is reduced to 3 fl. drachms or less. Transfer to a 3-oz. stoppered bottle, and when cold add ether, 3 fl. drachms; solution of ammonia, 1½ fl. drachm. Set aside in a cool place for not less than twenty-four hours. Collect the crystals on a counterpoised filter, wash with a little ether, dry and weigh. The residue should not weigh more than two grains.—Pharm. Journ., Dec. 30, 1905, 901.

Quinidine and Cinchonidine—Distinguishing Reactions.—C. Reichard, in continuation of his studies on alkaloid reaction, has investigated the reactions of quinidine and cinchonidine with various metallic salts, iodic acid, potassium ferrocyanide, ammonium persulphate, molybdic, chromic, and vanadic acids, etc. He believes that the two bases may be distinguished from each other by their reaction with sodium iodate. If a drop of hydrochloric acid is added to a mixture of this iodate with quinidine, an immediate yellow color is developed, whereas with cinchonidine the development of this color takes place much later. If ammonium persulphate is used in place of sodium iodide, a yellow color is likewise produced on the addition of hydrochloric acid, but the conditions are reversed, the color being immediately developed with cinchonidine and later with quinidine. These reactions can also be used for distinguishing these bases from other cinchona bases, as explained in the original paper of the author.—Pharm. Ztg., l, No. 83 (1905), 877.

Scopolamine—Anæsthetic Properties.—While scopolamine has heretofore been known only as a mydriatic and sedative, it is now stated to be useful as a general anæsthetic. Terrier reports that it can be given, preferably in association with morphine, so as to produce insensibility lasting as long as nine hours. It is however, not uniformly successful, and profuse sweating sometimes follows its use.—Pharm. Journ., Sept. 9, 1905, 364; from Med. Press., Sept. 6, 1905, 247.

Strychnine Oxide—Formation and Properties.—Pictet and Mattison obtain a new strychnine compound by gently heating strychnine with about 10 parts of 3 per cent. solution of hydrogen dioxide. From the solution so obtained the compound $C_{21}H_{22}N_2O_3 + 3H_2O$ crystallizes out, and, containing an excess of 1 mol. of O, is designated by the authors strychnine oxide. The solution of this oxide is colored red by ferric chloride on heating. With potassium dichromate and sulphuric acid, and with ammonium vanadate and sulphuric acid, it gives the same color reactions as strychnine. It produces an immediate blue color when added to potassium iodide starch paste, splits up on heating into strychnine and free oxygen, and when treated in aqueous solution with gaseous SO_2 forms strychnine sulphate. Strychnine oxide forms water-soluble salts, which, in distinction from ordinary strychnine salts, are not precipitable by ammonia. By reducing agents they are, however, converted into ordinary strychnine salts.—Pharm. Ztg., l, No. 87 (1905), 920; from Chem. Centralbl, 1905, ii, No. 15.

Bromostrychnine Tribromide—A New Compound.—On a former occasion (1890) H. Beckurts had shown that if two atoms of bromine are allowed to act upon one molecule of strychnine hydrobromide, hydrobromide of bromostrychnine is produced, $C_{21}H_{21}BrN_2O_2,HBr$. If, however, the quantity of bromine is doubled, tribromide of bromostrychnine is produced, $C_{21}H_{21}BrN_2O_2,Br_3$. This substance forms a yellow microcrystalline powder. It is converted by boiling into hydrobromide of bromostrychnine with simultaneous production of aldehyde. Dissolved in cold alcohol it gradually loses bromine and is converted into the dibromide, a similar change occurring on heating to 105° C. The ease with which this substance parts with its bromine indicates its nature to be that of a bromo addition product of bromostrychnine.—Arch. d. Pharm., *243*, No. 7 (1905), 493.

Isostrychnine—Formation and Characters.—In continuation of the studies of Pictet and Mattison on the oxidation products of strychnine (see Strychnine Oxide), Pictet and Bacovesco find that it suffices to simply heat a strychnine solution to 160°–180° C. to change the base. But under these conditions no oxidation product is formed, the strychnine being transformed into an isomer, which the authors have named "isostrychnine." This forms crystals which melt at 214.5° C., are inactive to polarized light, and though bitter to the taste, are about thirty times less toxic than strychnine.—Pharm. Ztg., li, No. 11 (1906), 118; from Journ. de Pharm. et Chim., 1905, xxii, No. 10.

Isostrychnine—Characters.—Bacovesco and Pictet give some additional properties of isostrychnine. It crystallizes in long needles, is sparingly soluble in cold water, benzin, ether in chloroform, requires 65 parts of boiling water, and is readily soluble in alcohol and in diluted acids. The aqueous and alcoholic solutions are distinctly alkaline in reaction, and are very bitter. Gold, platinum and silver salts, are reduced by the warm aqueous solution of the base, but the latter gives no color reaction either with bromine water or with ferric chloride. It is a monacid base, and forms salts which are more soluble in water than the corresponding strychnine salts, but also crystallize with more difficulty. While, as previously stated, isostrychnine possesses only about one-thirtieth the toxicity of strychnine, in its pharmacologic action it resembles that of curare more than that of strychnine.—Pharm Ztg., li, No. 46 (1906), 512; from L'Union Pharm., 1906, 169.

Thebaine—Formation of a Ketone, Thebainone, by Reduction.—By the reduction of thebaine with stannous chloride in acid solution, R. Pschorr has obtained a ketone of the empirical formula $C_{18}H_{21}O_3N$, to which he has given the name

Thebainone. It is readily soluble in chloroform, benzene, acetone, or or ethyl acetate, but less soluble in ether or water; in aqueous solution it has an alkaline reaction; it crystallizes from methyl alcohol in prisms containing a molecule of the solvent, and melts at 115°–118° C. Its oxime, which crystallizes in prisms from a mixture of ethyl acetate and ligroine, melts at 200°–201 C°, the semi-carbazone melts at 217°, and the methiodide at 255°–256°. Thebainone also yields an acetyl derivative, and is readily reduced by sodium amalgam to the corresponding alcohol, thebainol, which melts at 54°–55° C. Ludwig Knorr and the authors have obtained the following decomposition products of thebainone: Hydroxyethyldimethylamine, ethyldimethylamine, trimethylamine and dimethylmorphol, and, after reviewing all the decomposition products so far obtained from the three morphine alkaloids—morphine, codeine and thebaine—they summarize our present knowledge of the constitution of these alkaloids.—Pharm. Journ., Dec. 30, 1905, 909; from Ber. d. D. Chem. Ges., 1905, 38, 3153–3172.

Thebaine—Action of Benzoyl Chloride.—R. Pschorr and W. Haas find that when thebaine is dissolved in benzoyl chloride at 0° C., it is broken up into the benzoyl derivative of hydroxy-ethyl-methylamine and

Benzoyl-Thebaol. This crystallizes from glacial acetic acid in colorless needles, melting at 160–161° C. It is readily soluble in ether, alcohol, or chloroform. It is converted by bromine, in chloroform solution, into a dibromide melting at 229° C. On oxidation by means of chromic acid it yields benzoyl-thebaine quinone melting at 216° C.—Pharm. Journ., April 21, 1906, 471; from Ber. d. D. Chem. Ges., 1906, *39*, 16–19.

Theobrominelithium—Preparation of a Soluble Compound.—E. Dumesnil obtains "soluble theobrominelithium," to which he assigns the formula $C_7H_7N_4O_2Li$, by adding an excess of pure theobromine to an aqueous solution of lithium hydroxide, filtering the solution, evaporating it in a vacuum over sulphuric acid, and drying it at 110° C. It forms silky glistening needles, which are soluble in one-half their weight of water, but its solution when exposed to air soon becomes turbid owing to the formation of lithium carbonate and precipitation of the liberated theobromine. The salt is claimed to be far more active therapeutically than pure theobromine.—Pharm. Ztg., li, No. 29 (1906), 333; from Journ. de Pharm. et Chim., 1906, xxiii, No. 7.

Veratrum Alkaloids—Volumetric Method of Estimation.—According to G. Bredemann the alkaloids of *Veratrum album* may be conveniently and accurately estimated by the volumetric method, employing for this purpose Keller's method, with some insignificant modifications. He has determined that 1 Cc. of $\frac{N}{100}$ hydrochloric acid requires for saturation:

0.00625 Gm.	Protoveratrine ($C_{32}H_{51}NO_{11}$)
0.00411 Gm.	Jervine ($C_{26}H_{37}NO_3$)
0.00517 Gm.	Pseudojervine ($C_{29}H_{43}NO_7$)
0.00401 Gm.	Rubijervine ($C_{26}H_{43}NO_2$)

Furthermore, he has obtained experimental data which justify him in assuming the average molecular weight for the total alkaloid to be 424, and that therefore 0.00424 Gm. of the latter correspond to 1 Cc. of the $\frac{N}{100}$ acid. In the practical determinations applied to 36 specimens of veratrum rhizomes (both *V. album* and *V. viride*) he found variations of from 0.19928 to 0.93280 total alkaloid. In two cases he found the rootlets to have a higher alkaloid content than the rhizome, but to these the average molecular weight cannot be applied, since they contain a larger proportion of protoveratrine, and therefore must be assumed to have a higher molecular weight. The author describes the different veratrum alkaloids, showing their crystalline structure and that of some of their salts in illustrations accompanying his very comprehensive paper, which must be referred to in the original.—Apoth.-Ztg., xxi, Nos. 5 and 6 (1906), 41 and 53.

Antipyrine—Modification of the Isonitroso Reaction.—When applying the isonitroso test of the G. P. IV, to antipyrine, F. Sperling has found that the expected red coloration on addition of the third drop of fuming nitric acid, is not always distinctly developed, a brownish coloration of the previously green mixture being produced in some cases. He overcomes this uncertainty by introducing a substratum of sulphuric acid, as follows: To 2–3 Cc. of aqueous solution of antipyrine (1 : 100) 2 drops of fuming nitric acid are added. As soon as the green color of the mixture has developed, a substratum of 5 Cc. of concentrated sulphuric acid is carefully introduced, whereupon a distinct cherry-red ring manifests itself at the point of contact of the two liquids. The same modification is adapted to the examination of the salicylates and mandelates of antipyrine.—Pharm. Ztg., li (1906), No. 10, 108; from Ztschr. d. Oesterr. Ap.-Ver., 1906, No. 4.

Antipyrine—Detection in Pyramidon.—G. Patein recommends the following test for the detection of antipyrine in pyramidon, which depends upon the fact that antipyrine reacts with formaldehyde in the presence of hydrochloric acid to form diantipyrine methane, whereas pyramidon does not react in this way: To 1 Gm. of the suspected pyramidon, dissolved in 5 Cc. of water and 5 Cc. of hydrochloric acid, add 2 Cc. 40 per cent. formalin and warm for four hours on the water-bath; then dilute with 10 Cc. water and make alkaline with ammonia. In the absence of antipyrine the solution remains clear, whereas in the presence of this substance a crystalline precipitate of diantipyrine methane, m. p. 177°–179° C., is formed. Pyramidon may be extracted from the aqueous filtrate by means of chloroform; it melts at 104°–106° C.—Pharm. Journ., Sept. 9, 1905, 361; from Journ. de Pharm. et Chim., 1905 (6), *22*, 5.

Diphenylhydrazine Hydrochloride, $(C_6H_5)_2N.NH_2.HCl$, which is now obtainable, and forms a white crystalline powder, readily soluble in water, is found by Graaf to give a characteristic reaction with *milk sugar*, which see under "Carbohydrates."

Hydrazine and Hydroxylamine. Use for the quantitative separation of *gold*, which see under "Inorganic Chemistry."

Phenacetin—Contamination with Parachloracetanilide. — C. Mannich calls attention to a sample of phenacetin that recently nearly caused the death of a patient. The sample was found on examination to comply with the tests of the German Pharmacopœia in every respect except as regards its melting-point, which was 119°–120°, instead of 134°–135° C. This, however, alone was sufficient to show that the phenacetin must be very impure. Further examination revealed the presence of 5.89 per cent. of chlorine, which was in organic combination, since the substance yielded no ash and its solution gave no precipitate with silver nitrate. After several unsuccessful attempts, the impurity was separated by macerating the finely powdered phenacetin with cold ether for two days, filtering and evaporating the ethereal solution; the residue contained a much larger proportion of the impurity. It was further separated by repeatedly boiling with small quantities of water. The fourth extraction yielded a substance melting at 175°–177° C. This was finally proved by ultimate analysis and comparison with a specially prepared specimen to be parachloracetanilide. As this substance is not used in medicine, the admixture with phenacetin could not have taken place in the pharmacy from which it was obtained, nor is parachloracetanilide formed during the preparation of phenacetin. It is difficult, therefore, to account for its presence. Its physiological action has not been determined, but parabromacetanilide can be given internally with caution in doses of only 0.02 to 0.1 Gm. on account of the danger of producing collapse; probably the action of parachloracetanilide would be similar.—Pharm. Journ., April 14, 1906, 447; from Ber. d. D. Pharm. Ges., *16*, 57.

Phenolphthalein—Physiological Action.—J. H. Kastle has made physiological experiments on animals, which lead him to the assumption that phenolphthalein is voided by the urine in the form of a complex compound, which does not produce a color reaction with alkali and yields phthalein when decomposed with hydrochloric acid.

Fluorescein, which was also experimented with, is absorbed more rapidly than phenolphthalein and proved to be far more toxic—the latter having scarcely any toxicity.—Pharm. Ztg., li, No. 46 (1905), 513; from Chem. Centralbl., i, 1906, No. 19.

P-Phenylenediamine—Dangerous Use as Hair Dye.— Ernst Erdman warns against the use of p-phenylenediamine, which is employed for dyeing pelts under the name of

Ursol (Ursol D=p-phenylenediamine), but has also been used for the preparation of certain hair-dyes, known under such names as juvenia, juvenil, Fo, mixture venitienne, etc. In consequences of the irritation and eczematous eruption which this substance occasions, it is quite unsuited and dangerous to use as a dye for human hair, this untoward effect being attributable to the formation of an intermediate product.

Quinone di-imide, resulting during the process of oxidation necessary for the development of the desired brown color. It is well known that fur-dyers, engaged in the so-called urson dyeing, are frequently affected with eczema, as also with inflammation of the eyes and gastric disturbances which are doubtless due to the formation of this irritant body. To determine if hair or fur has been dyed with p-phenylenediamine, a small sample is treated with hot diluted hydrochloric acid (1 : 4), which dissolves the brown color. On boiling the solution several minutes, the brown color changes to a more or less pure cherry-red. The filtered and cooled solution is then nitrified, whereby the cherry-red color changes to yellow-brown. The diazo compound thus produced may then be treated with β-naphtholdisulphonate, which forms an intense violet coloring body, appearing blue when applied to a strip of filter-paper and dried.—Apoth. Ztg., xx, No. 71 (1905), 716; from Ztschr. f. angew. Chem., 1905, 1377.

Piperazine Compounds—Preparations and Characters.—According to Astric crystalline compounds of piperazine with benzoic or salicylic acid may be obtained by mixing alcoholic solutions of 1 mol. of piperazine with alcoholic solutions of 2 mol. of either of the acids named.

Piperazine Benzoate, $(C_6H_5COOH)_2C_4H_{10}N_2$, forms white scales, having a faint benzoic acid odor and aromatic taste, which are volatilized, without melting, at 120° C., and are soluble at 15° C. in 4.2 p. of water, 16.3 p. of 90 per cent. alcohol, and 46.4 p. of absolute alcohol. It reacts alkaline towards helianthin, as a monacid towards phenolphthalein.

Piperazine Salicylate, $(OH.C_6H_4.COOH)_2C_4H_{10}N_2$, forms white, odorless needles, having a sweet taste, which are volatilized at 160° C., without melting, and are soluble at 15° C. in 90 p. of water, 200 p. of 90 per cent. alcohol, and 450 p. of absolute alcohol. Towards helianthin it is neutral, but monacid towards phenolphthalein.—Pharm. Ztg., li, No. 36 (1906), 404; from Bull. Soc. Chim., Paris, *35*, 169; through Chem. Centralbl., 1906, i, No. 15.

Propane—Physical Properties.—Having prepared pure propane in con-considerable quantity, P. Lebeau determined its physical properties. It is found to boil at −44°5′C.; its critical temperature is 97.5° C., and critical pressure 45 atmospheres. Propane is very soluble in many media, and more so than either methane or ethane. Liquid propane does not solidify when cooled to −195° C. Pure ethane also is found to remain liquid at this temperature. These figures differ notably from many of those previously recorded.—Pharm. Journ., July 15, 1905, 69; from Compt. rend., *140*, 1454.

Pyridine—Purification and Properties.—E. Barthe has found that commercial pyridine invariably contains besides higher homologues also ammonia, which cannot be removed from it by fractional distillation, nor by means of sodium hypobromite. The ammonia may be completely removed, however, by shaking a mixture of 20 Cc. of pyridine and 0.5 Cc. of water several times successively with crystals of magnesium phosphate (obtained from 2 p. $MgSO_4$ and 3 p. Na_2HPO_4), distilling the pyridine so treated, and then rectifying it. He finds that so obtained

Pure Pyridine, boiling at 116°–118° C., contrary to the statements in the literature, does not blue litmus. It produces at most a wine-red color. If a blue color does result on addition of tincture of litmus, this is due to a foreign base, and in all probability to ammonia. The amount of ammonia present in commercial pyridine may therefore be determined by titration with $\frac{N}{10}$ H_2SO_4, using litmus as indicator.—Pharm. Ztg., l, No. 64 (1905), 671; from Bull. Soc. Chim. Paris (3), *33*, 659–661.

Pyramidon—Determination.—A. Astric and G. Perugier find that the method of precipitation with picric acid, shown by Lemaire to be applicable to the quantitative determination of antipyrine, is also available for the assay of pyramidon. 0.231 Gm. of pyramidon (the molecular weight of pyramidon is 231) is dissolved in 10 Cc. of water, and treated with 40 Cc. of $\frac{N}{20}$ picric acid solution (11.45 Gm. of acid in 1000 Cc.) shaken for a few minutes to facilitate precipitation, and filtered. The amount of uncombined picric acid remaining in 25 Cc. of the filtrate is then titrated with $\frac{N}{10}$ KOH solution with phenolphthalein as indicator. When $n =$ the number of Cc. used, and x the percentage of pure pyramidon sought, $x = (40 - 4n) \times 5$.—Pharm. Journ., Sept. 16, 1905, 387; from Ann. de Chim. Anal., 1905, *10*, 302.

Urotropine—Use of Nessler's Reagent to Determine Purity.—According to A. Wöhlk, an aqueous solution of pure urotropine (hexamethyleneamine) when boiled with Nessler's reagent does not assume a brown color nor afford a precipitate. In the presence of ammonium bases or amides, which may be present as impurities, however, the characteristic brown color reaction of these bases with Nessler's reagent is quickly developed. The presence of formaldehyde (or paraformaldehyde) is likewise determined by this test, the liquid becoming brown- or gray-black, and mercury is precipitated.—Pharm. Ztg., l, No. 104 (1905), 1095; from Ztschr. f. anal. Chem., 1905, No. 12.

GLUCOSIDES AND NEUTRAL PRINCIPLES.

Glucosides—Method of Detection if Split up by Emulsin.—E. Bourquelot determines the presence of glucosides, which are split up by emulsin, in vegetable substances, by the following method: The fresh, shredded organs (roots, stems, leaves, flowers, fruits, etc.), are placed in boiling alcohol and boiled for about 20 minutes, whereby the hydrolyzing or oxidizing enzymes present are destroyed. The alcoholic solution is decanted after cooling, the alcohol is distilled off, and the residue is dissolved in as many cubic centimeters of thymol water as the number of grams of vegetable substance operated upon. The aqueous solution is equally divided, emulsin being added to one portion, the other portion serving the purpose of control, and both portions are then placed in the incubator at 25° to 30° C., for 24, 48 or more hours, according to circumstances. On examining the two portions with the polarimeter, after clarification, the one to which emulsion has been added will be found to be dextro-rotatory if the substance under examination contains a glucoside that is hydrolyzable with emulsin ; for all the known glucosides that are so hydrolyzed, although themselves lævo-rotatory, yield by splitting up a mixture of inactive bodies and dextro-rotatory glucose. In this way Bourquelot and Harlay have demonstrated the presence of glucosides in the seeds, barks, tubers, roots and rhizome of a number of plants, such as *Ancuba japonica*, *Betula alba*, *Colchicum autumnale*, *Digitalis purpurea*, *Dipsacus pilosus*, *Fraxinus excelsior*, *Hibiscus esculentus*, *Loroglossum hircinatus*, *Scrophularia nodosa*, *Strychnos potator*, *Valeriana officinalis* and *Verbascum thapsus*. While this list does not consider the presence of glucosides in leaves, the authors find that such that are split up by emulsin are of most frequent occurrence in leaves, certain plant-families, such as the caprifoliaceæ, coniferæ and oleaceæ, containing it in the leaves of all species. The quantity of glucose may be estimated by the degree of rotation manifested under certain prescribed conditions, and this, in turn, permits within certain limitations the identification of the glucoside, either as one already known or one that is new.—Pharm. Ztg., li, No. 36 (1906), 403 ; from Journ. de Pharm. et Chim., 1906, xxiii, No. 8.

Glucosides—Localization in Plants.—As a result of a micro-chemical research on the localization of glucosides in plants, conducted under the supervision of Professor E. Perrot, M. R. Chemineau has found that, in the case of madder, *Rubia tinctorum*, the glucosides can be localized by first using a 5 per cent. solution of sodium chloride to induce plasmolysis, and then by a very weak solution of potassium hydrate, by which a reddish-orange color is developed in the cells containing these bodies ; also the presence of purpurine, which exists in the same cells, and arises from the splitting-up of one of the glucosides, can be localized in the form of purplish crystalline tufts by immersing the fresh root in alcohol of 95 to 100 per cent. for about forty-eight hours before cutting sections. The root of *Rubia peregrina*, Linn., differs only in the glucosides being absent from the pith and wood. The glucosides are not produced in the aerial portion of the plant except under conditions of darkness and moisture. In the walnut (*Juglans regia*, Linn.), after concentration of the cell contents by use of the 5 per cent. solution of sodium chloride, a section of the tissues exposed to the vapor of ammonia on a cover glass over a glass cell will show instantaneous coloration of cells containing juglon. It is interesting to note that whilst in madder no coloring matter is present in the endodermis it is so in that of the walnut tree, in which it apparently exists in combination with the nucitannic acid. In ericaceous plants arbutine can be localized by means of nitric acid diluted with half or an equal volume of water in which the sections are immersed for a minute and a half for the stronger solution, and three or four minutes for the weaker one.—Pharm. Journ., Aug. 5, 1905, 195 ; from Travaux du Laborat. de Mat. Med. de l'Ecole Sup. de Paris, 1905.

Ammoniacal Glycyrrhizin—Preparation.—Gawalowski finds that commercial ammoniacal glycyrrhizin, while containing a large percentage of the neutral ammonium salt, $C_{44}H_{63}NO_{18}$, cannot by any means be regarded as a pure substance. Such a product was obtained by the author from Moravian extract of licorice by dissolving it in a little ammoniacal water, to form a syrupy solution, adding alcohol, filtering off the dissolved portion, and evaporating the filtrate on porcelain plates, at a low temperature at first, and finally at a moderate heat in a strong current of air to dryness. The ammonium salt is thus obtained in the form of leaf-like lamellæ.—Pharm. Ztg., li, No. 28 (1906), 321; from Pharm. Post, 1906, No. 9.

Gentiopicrin—Preparation and Characters.—G. Tanret has studied the chemical characters and relations of gentiopicrin, which was obtained by extracting freshly-prepared extract of gentian with warm acetic ether. After filtering and distilling off a portion of the solvent and cooling, a syrupy deposit is formed, which, when dried in the air, forms a crystalline mass. This is recrystallized from absolute alcohol, but still contains about 1 per cent. of gentiin, a glucoside sparingly soluble in water. It is therefore treated with warm acetic ether containing 2 per cent. of water. On cooling pure gentiopicrin separates out. Gentian extract contains from 7 to 14 per cent. of gentiopicrin, calculated on the dry extract. It crystallizes both as hydrated and anhydrous crystals. The form $(C_{16}H_{20}O_9)_2H_2O$ is obtained by crystallization from water, or from hydrated acetic ether; it melts at 122° C. The anhydrous salt, crystallized from alcohol or dry acetic ether, melts at 191° C. The hydrated salt parts with its water with difficulty at 100° C., and does not dry well below 105°. Emulsin hydrolyses gentiopicrin with the formation of glucose and gentiogenin, $C_{10}H_{10}O_4$, which is crystalline: $C_{16}H_{20}O_9 + H_2O = C_6H_{12}O_6 + C_{10}H_{10}O_4$. Gentiopicrin is a lactone; its solutions are neutral, but on adding alkalies to them the latter are gradually neutralized, forming salts from which acids liberate gentiopicric acid, $C_{16}H_{21}O_{10}H$, which is gradually converted back into gentiopicrin. On acetylizing in presence of zinc chloride, a crystalline pentacetyl, $C_{16}H_{15}O_4(C_2H_3O_2)_5$, m. p., 139° C; a_D — 164° is formed. Hydrated gentiopicrin has the a_D — 198.75°.—Pharm. Journ., Aug. 19, 1905, 251; from Compt. rend., 1905, *141*, 207.

Prulaurasin—The Hydrocyanic Acid-yielding Glucoside of Cherrylaure Leaves.—It has been accepted in recent years that the hydrocyanic acid-yielding constituent of cherrylaurel leaves is an *amorphous* body, composed of equal molecules of amygdalin ($C_{46}H_{27}NO_{22}$) and amygdalic acid ($C_{40}H_{26}O_{24}$), which has been named "laurocerasin" by Lehmann. H. Hérissey has now succeeded in isolating a crystalline body having the formula $C_{14}H_{17}NO_6$, which he has named "prulaurasin" (from *Prunus laurocerasus*). It is obtained by the following process: The fresh leaves are treated with boiling water to destroy the emulsin contained in them; they are then reduced to pulp by pounding, and again boiled several minutes with water containing a small quantity of calcium carbonate. After cooling completely, the mass is expressed; the press-liquid is clarified with albumen and filtered. The filtrate is then evaporated at a low temperature with a little calcium carbonate to one-sixth its volume; this is added to four times its volume of 85 per cent. alcohol, and, after standing 24 hours, the clear alcoholic liquid is decanted from the voluminous precipitate and distilled to dryness in a partial vacuum. By repeated treatment of the dry residue so obtained, first with acetic ether then with ethyl ether, and, finally, repeated crystallizations from pure acetic ether, the pure glucoside is obtained in crystals. Pure prulaurasin crystallizes in various forms, dependent on the content of water. By the method described it is obtained in form of colorless and odorless needles having a bitter taste. It melts at 120°–122° C., is readily soluble in water, alcohol and acetic ether, is laevorotatory, and in aqueous solution is split by the action of emulsin into hydrocyanic acid, d-glucose and benzaldehyde.—Pharm. Ztg., li, No. 11 (1906), 118; from Journ. de Pharm. et Chim., 1905, xxii, No. 10.

Salicin—Constitution.—In the course of researches on the constitution of salicin by J. C. Irvine and R. E. Rose, the glucose was alkylated by means of the joint action of silver oxide and methyl oxide, with the production of

Pentamethylsalicin.—The process was carried out in the first instance in methyl-alcoholic solution, and, after the alkylation had proceeded far enough, methyl iodide was used as solvent. The product crystallized in delicate needles (melting-point, 62° to 64° C.), readily soluble in organic solvents, and giving $[\alpha]_{D}^{20°}$—52.15° in alcoholic solution. Emulsin was found to be without action on the compound, and even dilute mineral acids readily converted it into a resinous mass resembling saliretin. The hydrolysis was, therefore, carried out indirectly by prolonged heating at 100° C. of a solution of the substance in methyl alcohol containing 0.25 per cent. of hydrochloric acid. Tetramethyl glucose was thus produced and afterwards converted into the equilibrium mixture of *α*- and *β*-tetramethyl methylglucosides. The alkylated glucosides were isolated and then hydrolyzed to give tetramethylglucose (melting-point, 84° to 86° C.). This reaction proves that salicin (and hence also helicin and populin) contains the same *γ*-oxidic linking as the methylglucosides and sucrose. Further evidence on this point was obtained in the synthetical preparation of pentamethylsalicin. On heating saligenin and tetramethyl glucose to 120° C. in benzene containing 0.25 per cent. of hydrochloric acid, condensation took place with the formation of a mixture of saligenin tetramethyl glucosides and octamethyl glucosidoglucoside. After separation of the alkylated dissaccharide the mixture was methylated by the silver oxide reaction and a compound, identical in every respect with the pentamethyl salicin prepared directly from the glucoside, was isolated from the product.—Pharm. Journ., April 28, 1906, 501; from Proc. Chem. Soc., April, 1906, *22*, 113.

Santonin—New Reaction for its Detection in Urine.—Neuhaus finds that if a few cubic centimeters of urine voided after the administration of santonin are treated with a few drops of Fehling's solution, a dark green color is developed, which, on further addition of the reagent, changes the urine to dark violet-red. If then an acid is added, the color changes to light green, and if, as is best, acetic acid is used for this purpose, an emerald-green color is produced. The reaction is characteristic and is not produced after the administration of any other drug, except rhubarb; but in this case a dirty green color is developed, and the violet-red fails. —Pharm. Ztg., li, No. 25 (1906), 278.

Saponins—Kinds Yielding Pentoses on Hydrolysis.—L. Rosenthaler has determined that while the saponin from a species of *Gypsophila*, as previously recorded, yields arabinose when hydrolyzed with dilute hydrochloric acid, the saponins of *Polygala senega*, *Camellia theifera*, *Entada scandens*, *Dialopsis africana*, *Quillaia saponaria*, *Guaiacum officinalis*, and *Digitalis purpurea*, all give pentoses when hydrolyzed, which react with the phloroglucin or orcin tests. The saponins of *Smilax sarsaparilla* and of *Verbascum thapsus* do not, however, give any such reactions. The liquid, after hydrolyzing the saponin, is treated with phloroglucin and fuming hydrochloric acid. On warming a red color is produced if pentoses be present, which shows absorption bands between the lines D and E of the spectrum. The orcin reaction is obtained with a mixture of orcin, 0.10 Gm., fuming hydrochloric acid, 50 Gm., and ferric chloride solution, 3 drops. A few Cc. of this reagent is heated with the liquid after hydrolysis; when cold an equal volume of amylene hydrate is added, followed by enough water to cause separation. The amylene which is thrown out, and which rises to the surface, is colored blue or green in the presence of pentoses. Amylene hydrate is preferable to amylic alcohol generally used in the test, because the latter often contains furfural.—Arch. d. Pharm., *243*, No. 4 (1905), 247.

Saponin—Detection in Aerated Beverages.—J. Vamvakas recommends the following method for the detection of saponin in aerated beverages: 100 Cc. of the beverage is boiled to drive off the carbonic anhydride and the ammonia in the water used in its manufacture. The volume is made up to 100 Ml. with water, and a slight excess of basic lead acetate is added. The precipitate formed is filtered out and washed, excess of lead is removed from the filtrate by means of a current of hydrogen sulphide, the lead sulphide is removed by filtration and the filtrate boiled until every trace of hydrogen sulphide has been removed, so that a drop of tincture of iodine is no longer decolorized by the liquid. After cooling, this is divided into three portions. A few drops of Nessler's reagent are added to one; in the presence of saponin a yellow precipitate is formed which retains its color for some time, ultimately becoming deep green where in contact with the sides of the glass. The second portion is also treated with Nessler's solution and boiled. The dense precipitate formed is grayish-green or grayish-black. The third portion is treated with a few drops of concentrated solution of tartaric acid and divided into two portions, one of which is boiled. On adding Nessler's solution to both of these no precipitate is formed in either.—Pharm. Journ., June 23, 1906, 733; from Ann. Chim. Analyt., 1906, *11*, 161.

Gypsophila Saponin—Composite Character.—L. Rosenthaler has re-investigated the characters of saponin from the so-called white or Levantine soaproot (derived from an undetermined species of *Gypsophila*) with the object of explaining conflicting statements concerning its character since its original examination by Rochleder and Schwarz in 1854. He finds that the composition of gypsophila saponin does not correspond to the generally-accepted formula, and that it is in all probability a mixture of two homologous bodies, $C_{18}H_{28}O_{10}$ and $C_{19}H_{30}O_{10}$. Furthermore, that, contrary to the views of Rochleder, the products of hydrolysis consist approximately in equal parts of sapogenin, an arabinose and another sugar, which requires further investigation to establish its identity—Arch. d. Pharm., *243*, No. 7 (1905), 496–504.

"Gratus" Strophanthin! "Strophanthinum Crystallizatum"—Caution.—E. Merck (annual report, 1905) calls attention to the fact that the crystallized strophanthin of Thoms, which is prepared from the seeds of *Strophanthus gratus*, and has proven effective in doses of 0.0125 to 0.025 Gm., is given in much larger doses than the amorphous strophanthin commonly employed, which is evidently more toxic. A substitution of the one for the other must therefore be carefully avoided. It is suggested that the "gratus strophanthin" be designated in prescriptions as "g-strophanthin Thoms" or "g-strophanthin crystallizatum."—Pharm. Ztg., li, No. 30 (1906), 342.

Taxicatin—A Glucoside from Taxus Baccata.—Lefebvre has obtained a crystalline glucoside from the fresh leaves of *Taxus baccata*. It melts at 165° C., rotates to the left ($a_D = -72°$), and is hydrolyzed by emulsin. It is distinguished from coniferin and picein by giving a characteristic blue coloration.—Pharm. Ztg., li, No. 36 (1906), 404; from Bull. Commerc., 1906, No. 3.

Vanillin—Convenient Distinction from Coumarin.—If a small quantity of vanillin is added to a mixture of 5 Cc. of phenol and 3 Cc. of pure sulphuric acid, the reagent becomes yellow and then changes to red. If it is heated a few minutes at 160°–170° C., the mixture becomes blood-red and finally almost black. If it is then dissolved in water and a few drops of $\frac{N}{2}$ sodium hydrate are added, the liquid assumes a deep dark-red. Coumarin treated in the same way gives no color reaction.—Pharm. Ztg., li, No. 46 (1906), 512; form Chem. Centralbl., 1906, i, No. 19.

COLORING MATTERS.

Synthetic Coloring Matters—Method of Separation from Food Products.—For the purpose of shaking out artificial coloring-matters from food products it is recommended (in Pharm. Weekbl., 1905, No. 44) to use a mixture of equal volumes of amyl alcohol, ethyl alcohol and water. Triturate 5 Gm. of the substance with 5 Gm. of water, heat the mixture with 10 Cc. each of ethyl- and amyl-alcohol, and, when cool, add more water. The amyl alcohol, containing the artificial coloring-matter, will separate, and may then be decanted for further examination.—Pharm. Ztg., l, No. 97 (1905), 1022.

Fruit and Vegetable Colors—Comparative Study.—On account of the frequency with which questions arise concerning the authenticity of given samples of fruit syrups and fruit juices, and in consequence of legislative attempts which have recently been made to legalize the use of certain harmless colors of vegetable origin where conditions arise in which the original fruit colors are not permanent, Charles H. LaWall has made a comparative study of various coloring materials, from which he is led to the opinion that the authenticity of any given sample of fruit juice or fruit syrup may be absolutely proved, while the presence of a coal-tar color can be positively detected. The recognition of many of the purely vegetable colors which may be added to fruit juices and syrups also become quite possible by the tests which are recorded in the author's paper. The most serviceable tests appear to be those made with reducing agents, the following fruit colors remaining unchanged in zinc and hydrochloric acid or in solution of stannous chloride: Blackberry, cherry (red and black), cranberry, currant, elderberry, grape, huckelberry, plum, raspberry and strawberry. Of other coloring-matters, annato, cochineal, madder, red saunders and safflower are also not changed by either of these reducing agents, nor are beet juice, brazilwood, fustic, logwood, marigold, saffron or turmeric by solution of stannous chloride, but they are rendered lighter or, in most cases, completely decolorized by zinc and hydrochloric acid. The only vegetable coloring-matters that are decolorized by both of these reducing agents are cudbear and litmus, as are also all the coal-tar colors which have been examined by the author, although he is aware that there are some non-reducible synthetic colors in use at the present time.—Amer. Journ. Pharm., July, 1905, 301–311.

Biliary Coloring Matters—Sensitive Reaction.—A. Krokiewicz finds the following to give a very sensitive reaction for bilirubin and other little oxidizable coloring-matters of bile in the urine as well as in the stomach contents: A mixture of 1 Cc. each of 1 per cent. aqueous solutions of sulphanilic acid and sodium nitrite is poured into a test-tube and again poured out so that only a few drops of the reagent remain in the test-tube. About 0.5 Cc. of the urine, or of the fluid to be examined, is now poured into the test-tube, which is then vigorously shaken. In the presence of the bile-pigments mentioned, the liquid assumes a ruby-red color, which, on addition of 1 or 2 drops of hydrochloric acid and dilution with several times the volume of water, is changed to amethyst-violet. This indicates very small quantities of the coloring-matter. In the presence of larger quantities it may be necessary to dilute the liquid with as much as ten times its volume of water.—Pharm. Ztg., li, No. 29 (1906), 334; from Munch. Med. Wschr., 1906, No. 11.

Dyestuffs—Volumetric Valuation by Means of Titanium Trichloride, which see under "Inorganic Chemistry."

Coloring Matter of Red Cabbage—Availability as Indicator in Alkalinity.—See *Red Cabbage*, under "Materia Medica."

Crocetin—Characters and Formation of Crystalline Salts.—Pfyl and Scheitz have obtained crystalline salts of crocetin, the coloring-matter of saffron. Saffron was dried in a vacuum on the water-bath, then finely powdered and again subjected to the drying process. The dusty, dry powder so obtained was extracted in the extraction apparatus with absolute alcohol, from which on evaporation to one-tenth its original volume (?) a fine red powder was deposited. This was collected, dissolved in $\frac{N}{10}$ hydrochloric acid and boiled for about a quarter of an hour, when crocetin separated from the solution in form of amorphous flakes, which were collected and dried on a clay tile. So obtained, crocetin is a perfectly dry, granular substance, which does not exhibit the slightest tendency to resinify. It forms crystallizable salts with ammonia, quinine and brucine. The ammonia salt forms fine, silky, glistening needles, the quinine salt forms similar but yellow crystals, and the brucine salt also, but of a still darker yellow color.—Pharm. Ztg., li, No. 29 (1906), 334; from Chem. Ztg., 1906, No. 27.

Indigo—Synthesis from Quinoline.—H. Decker and C. Kopp have accomplished the synthesis of indigo from quinoline, by first obtaining an addition product of this base with chloracetic ether, oxidizing this by heating with permanganate, evaporating the filtrate in the presence of free alkali, and heating the residue to 200° C. The fused mass so obtained has the same properties in all respects as that of phenylglycin carbonic acid produced in well-known technical methods of producing synthetic indigo. —Pharm. Ztg., li, No. 17 (1906), 191; from Ber. d. D. Chem. Ges., *39* (1906), 72.

Indican—Determination in Urine, which see.

Indigotin—Determination in Commercial Indigo and Indigo-Yielding Plants.—C. Bergtheil and R. V. Griggs have investigated the standard methods of estimating indigotin in commercial indigo. It is shown that all the methods dealt with are reliable when applied to pure indigotin, but that in application to commercial indigo the impurities present lead to errors; only those methods depending on the oxidation or reduction of solutions of sulphonated indigo are found to be applicable in this case. The methods which have been proposed for removing the undissolved impurities from solutions of sulphonated indigos are discussed, and it is shown that both that of Rawson and that of Grossmann lead to precipitations of indigotin, and consequent errors in the results obtained. An alternative method of purifying the solution with freshly precipitated barium sulphate is described and shown to be free from the errors in the previous methods proposed. The effect of the impurities which remain in solution is traced, by making up indigos of known degrees of purity from pure indigotin and substances derived from the waste water from indigo manufacture, and is found to be an error of from 1 to 2 per cent., for an indigo of average quality, in the methods investigated. The effect of indirubin is similarly traced. Oxidation with permanganate is found to supply a readier method of determining indigotin than reduction, methods depending on the latter principle being more troublesome and only applicable in conjunction with Grossmann's method of purification, which involves an error; they are, however, the most useful in dealing with indigos containing much indirubin. A method for the determination of indigotin in indigo-yielding plants by precipitation from an extract with persulphuric acid, has been described by Rawson, but it has been shown by Bergtheil (1904) that the results obtained by its application do not coincide with those derived by fermentation with indigo enzyme. The authors have investigated the cause of this anomaly, and found it due to the employment of an excess of persulphuric acid by Rawson, and that, by suitably modifying the method, results may be obtained which agree with those obtained by fermentation.—Pharm. Journ., June 30, 1906, 757.

ALBUMINOIDS.

(*Including Animal Products.*)

Polypeptides—A Synthetic Form of Albumins.—In a recent address at Berlin, before the German Chemical Society, in which Emil Fischer described the character and results of his researches on amino acids, polypeptides and proteines, which have for a long time engaged his attention, he announces the practical production, at least from the chemical standpoint, of synthetic albumen. Beginning with a study of the amino acids, which are the products of the splitting-up of albumen, he produced many of these acids synthetically, and thus arrived at a knowledge concerning their individuality, and of the chemical peculiarities of bodies about which heretofore little or nothing has been known. In the further study of these comparatively simple components of alluminoid bodies, he succeeded in combining these in numerous and most varied couplings, and so eventually produced a class of bodies which not only closely resemble the peptones—hence named by the author "peptonides"—but possess the essential characters of the natural peptones and albuminoids. Certain distinctions that exist between the natural and synthetic products are of a subordinate character, and may readily be explained. But the synthetic products may, like albumen, be beaten into snow-like froth, have the bitter taste of peptone, give the same reactions, and are hydrolyzed by the action of ferments. Thus, for instance, the synthetic product is split up or *digested* by the pancreatic juice precisely like the natural product; and in view of the fact that this property is exclusively inherent in alluminoid bodies, the assumption appears warranted that Fischer's polypeptides are in reality synthetic albumins.—Pharm. Ztg., li, Nos. 4 and 5 (1906), 43 and 53.

Casein—Decomposition by Ozone.—C. Harris describes experiments made to determine the action of ozone on casein. This was dissolved in $\frac{N}{10}$ caustic soda, and exposed to the action of ozone until dilute hydrochloric acid gave no precipitate of unchanged casein. The solution thus obtained contained no hydrogen peroxide, and only feebly reduced Fehling's solution. After standing, the ozonized solution developed a characteristic smell of melted sugar. The author then endeavored to isolate the sugar substance by means of phenylhydrazine. An osazone was thus formed, which contained almost all the phosphorus of the casein, and possessed acid properties, reduced Fehlings's solution, like the osazone of milk-sugar, but was difficultly soluble in water. When the ozonized solution was treated with lead acetate, a white precipitate resulted, from which, on treatment with hydrogen sulphide, a white substance soluble in water, could be obtained, containing nearly 2 per cent. phosphorus, and over 40 per cent. oxygen, while the nitrogen amounted to 5 to 7 per cent. The substance had an acid reaction, gave no biuret reaction, and no precipitate with phosphorus tungstic acid. When its neutralized aqueous solution was warmed with phenylhydrazine hydrochloride and sodium acetate, and normal hydrochloric acid was added, the same yellow osazone was obtained as was produced directly from the ozonized liquid.—Chem. News, Oct. 27, 1905, 202; from Ber. d. D. Chem. Ges., 1905, No. 12.

Milk—Valuation by Means of an Oxidation Number.—E. Comanduci finds the percentage of oxidizable substances in milk to vary, in accordance with its quality (dilution), from an ascertained standard, which he designates as the "Oxidation Index," while the variations are indicated by the "Oxidation Number." The test is made by determining the quantity of potassium permanganate required for the oxidation of the milk and is carried out as follows: 1 Cc. of the milk is diluted with water to 100 Cc.; 10 Cc. of this diluted milk is heated with 20 Cc. of diluted sulphuric acid

(1:5) to 60° or 70° C. on a water-bath, and $\frac{N}{10}$ potassium permanganate solution is then added, drop by drop, until a rose color, permanent during five minutes, is produced. The number of cubic centimeters of permanganate solution consumed by 1 Cc. of normal milk are taken as the standard or oxidation index which was found for *cow's milk* to be 50–52; *goat's milk* 44–45; *sheep's milk* 43–48; *ass's milk* 55–58; *human milk* 58–60. The addition of 10 per cent. of water reduces the oxidation number (of cow's milk ? Rep.) to 44; 20 per cent. to 39 per cent.; 30 per cent. to 35 per cent.; 40 per cent. to 31 per cent.; etc., etc.—Pharm. Ztg., li, No. 46 (1906), 514; from Chem. Ztg., 1906, No. 41.

Milk—Convenient Method of Fat Determination.—J. Dekker recommends the following convenient and accurate method for the determination of fat in milk: Boil 10 Cc. of milk and 10 Cc. of concentrated hydrochloric acid in a flask until the precipitated casein is redissolved. The brown liquid resulting, after cooling, is shaken with 50 Cc. of chloroform, allowed to stand 5 minutes, then adding 3 Gm. tragacanth and shaking again. Now decant 40 Cc. of the chloroform solution from the mucilage formed, distil off the chloroform, dry the residue at 100° C. for one hour and weigh.—Pharm. Ztg., li, No. 11 (1906), 120; from Pharm. Weekbl., 1905, Nos. 48 and 49.

Milk—Estimation of Albuminoids with Formaldehyde.—Trillat and Sauton find that the albuminoids of milk may be conveniently and reliably estimated by the aid of formaldehyde, which produces an insoluble and stable precipitate without changing the normal weight of the albuminoid, so that the latter can be washed with acids, alkalies or other solvents needed for its purification. The test is best made as follows: 3 Cc. of the milk diluted with 25 Cc. of water is heated to boiling during 5 minutes; 5 drops of ordinary formaldehyde solution are now added, the mixture is boiled 2–3 minutes, then allowed to settle 5 minutes, and thoroughly shaken with 5 Cc. of 1 per cent. acetic acid. A pulverulent precipitate is thus produced, which, after subsidence, is collected on a filter, washed with water, transferred to a Soxhlet apparatus and extracted with acetone until all fat is removed. It is finally dried at 75°–80° C., the entire process consuming not more than 2 hours.—Pharm. Ztg., li, No. 46 (1906), 514; from Chem. Ztg., 1906, No. 41.

Milk—Detection of Formaldehyde.—E. Seligmann finds that Schiff's reaction for formaldehyde in milk must be carried out upon the distillate from the milk, as milk itself even after boiling has the power of restoring the red color to a solution of fuchsin decolorized by sodium sulphite; this power is, however, destroyed by the addition of acid. In view of this circumstance the following test for small quantities of formalin is recommended: To 5 Cc. each of pure milk and of the suspected sample add two to three drops of dilute sulphuric acid and then 1 Cc. of fuchsin solution which has been decolorized by sodium sulphite; if formalin is present a reddish-violet color is developed in one to two minutes, though it may take a good deal longer if the amount of formalin is very small.—Pharm. Journ., July 29, 1905, 116; from Ztschr. f. Hygiene, 1905, *49*, 325.

Milk—Effect of Formaldehyde on Bacteria.—Paul Sommerfeld finds that 1 part of formalin added to 5,000 or 10,000 parts of fresh milk considerably diminishes the growth of bacteria, the germicidal action being at a maximum if the milk be kept at a temperature of 10 to 15° C. If kept at 20° C., there are almost as many germs after twenty-four hours as in milk which is free from formalin; at 37° C. formalin has practically no action at all. The use of formalin as a preservative of milk for analytical purposes is therefore recommended, but it is suggested that the only way to preserve milk for consumption is to cool it to a low temperature immediately after milking, and then to keep it below 10° C.—Pharm. Journ., July 29, 1905, 116; from Ztschr. f. Hygiene, 1905, *50*, 153.

Milk Powder—Composition.—F. Krull has determined the average composition of milk powder obtained by Hatmaker's process to be as follows:

Full-Milk = Fat, 28.76 per cent.; lactose, 36.8 per cent.; albumen, 26.15 per cent.; salts, 6.7 per cent.;

Skim-Milk = Fat, 15.10 per cent.; lactose, 39.7 per cent.; albumen 33.3 per cent.; salts 6.9 per cent.

The percentage of water is from 0 to 5 per cent. in either sort. Based on the latter percentage a mixture of 135 p. of milk powder and 870 p. of water at 60° C., produces a milk that corresponds almost absolutely with the fresh milk from which the powder is obtained. The milk powder which is obtained by drying the milk on two rapidly rotating horizontal cylinders which are heated with steam, is a yellowish-white powder having an agreeable odor and taste, and, being absolutely sterile, is quite stable if kept in close vessels and in a dry place.--Pharm. Ztg., li, No. 26 (1906), 301; from Ztschr. f. angew. Chem., 1906, No. 11.

Pepsin—Assay by the Biuret Reaction.—W. B. Cowie and William Dickson, in search of a reliable method for the assay of pepsin which would have the advantage of avoiding the prolonged and elaborate manipulations involved in the existing recognized processes, found Piotrowski's biuret reaction—the coloration by a solution of copper sulphate and potassium hydroxide in the presence of true peptone—to be available for this purpose. The test is carried out as follows:

The amount of coagulated albumen equivalent to 1 Gm. of actual or dried albumen is placed in a glass mortar, triturated with 10 Cc. of water at 40° C., washed into a 100 Cc. flask with other 10 Cc. of water at 40° C., and coagulated by heating on a water-bath for fifteen minutes. This is then cooled to 40° C., and 0.25 Gm. pepsin added, which is washed into the flask with 25 Cc. of $\frac{N}{10}$ HCl. The whole is vigorously shaken, placed in water, kept in a digesting pan at 40° C. for four hours, care being taken to have the flask immersed up to the neck in water and shaken every half-hour. At the end of that time the flask is immersed in boiling water for half an hour to prevent further action of the enzyme. The contents are then cooled to 15.5° C., and made up to 100 Cc. with water. Ten Cc. of the mixed liquid are placed in a test-tube; 13 Gm. zinc sulphate and 0.2 Cc. (1 : 4) sulphuric acid are added. The liquid must be completely saturated at 15.5° C., and 13 Gm. is a suitable quantity. The whole is then heated to boiling, cooled quickly with centrifugal motion, and filtered through a dry filter into a dry test-tube.

Five Cc. of the filtrate are placed in a 100 Cc. Nesslerising tube, mixed with 15 Cc. of water, 1 Cc. of a 0.5 per cent. solution of $CuSO_4, 5H_2O$, and made up to 80 Cc. with 30 per cent. NaOH solution; any slight precipitate may be removed by filtering through glass wool. Seventy-five Cc. of recently boiled and cooled distilled water are placed in a similar Nesslerising tube, and a standard solution of potassium permanganate made by dissolving 0.04 Gm. of the pure salt in recently boiled and cooled distilled water and made up to 1,000 Cc. at 15.5° C. is run in until the depth of color is the same in each tube, the tubes being viewed longitudinally over a mirror as in Nesslerising.

It is of primary importance that a quantity of specially prepared scale egg-albumen corresponding to 1 Gm. actual albumen be always used in applying the test. This

Prepared Scale Egg-albumen is obtained as follows: The whites of one dozen fresh eggs are mixed and strained through a piece of fine linen to remove the fibrous threads, the mixed albumen is placed in shallow porcelain trays, and dried at 40° C. The scaled albumen is now rubbed to a fine powder, bottled, and the moisture determined in a portion at 100° C. The amount of moisture was found to range from 10 to 14 per cent.—Pharm. Journ., Feb. 24, 1906, 221–225.

Chymosin—Identity with Pepsin.—According to the recent studies of W. Sawjaloro, the identity of pepsin and chymosin appears to have been definitely established. The author demonstrates that the stomach contains only a single ferment, pepsin, and that this unites both the proteolytic and milk-curdling properties of the stomach secretions. The milk-curdling effect is regarded as the beginning of the digestive action on the milk; the so-called rennet-coagulum, is simply a pronounced digestion of the casein.—Pharm. Ztg., li. No. 11 (1906), 119; from Ztschr. f. Physiol. Chem., 1905, 307.

Papain—Behavior with Albuminoids.—C. Delezenne, H. Mouton, and E. Pozerski state that if a solution of papain is mixed with fresh egg-albumen, or with blood-serum, then rendered faintly acid with acetic acid, and immediately heated to 100° C., it will be found that the greater part of the albuminoids have been rendered coagulable by heat. The peptonizing action proceeds so rapidly that a minimum time for its completion cannot be fixed. The amount of matter digested is directly proportional to the square root of the quantity of ferment added. If the papain solution is first heated to boiling, it is rendered inert. The products of digestion are found to be secondary albumoses and true peptone, the former comprising two-thirds or three-fourths of the total. If, however, the mixture of papain and albumen be set aside for some time before being heated, the amount of coagulable albumen left becomes much greater, and the quantity of peptones and albumoses formed correspondingly less. Thus the amount of the former obtained on boiling four hours after mixing is nearly twice that resulting from an experiment when the mixture is heated to 100° C., after a minute's contact.—Pharm. Journ., April 14 1906, 447; from Compt. rend., 1906, *142*, 177.

Rennin—Method of Testing.—Charles E. Vanderkleed calls attention to the necessity of uniformity in testing the coagulating power of rennin, and that the time of exposure must be taken into account, since a weaker preparation will require a longer time for the complete reaction than a stronger preparation with which it is compared. He therefore recommends the following method of testing: Weigh 100 milligrams of the sample to be tested and dissolve it in 100 Cc. of water. Place 75 Cc. of fresh milk in each of several 4-oz. round screw-cap vials (such as are used for sampling oils) and immerse the latter in a water-bath kept at a constant temperature of 43° C. (110° F.). When sufficient time has elapsed for the milk to acquire the temperature of the bath, remove the vials, one at a time, and run, by means of a pipette, 2½, 3, 4, 5, 6 and 7½ Cc. of the rennin solution into the respective vials, noting the exact time at which each addition is made, returning the vial to the bath immediately after adding the rennin solution. At the expiration of exactly seven and one-half minutes for each vial, remove it from the bath, and note at once the state of coagulation of the milk. In order to be considered coagulated the milk must have entirely lost its fluidity, and on inversion of the vial must break up into not more than 3 or 4 coagulated masses, with the separation of a clear watery "serum." If 5 Cc. of the rennin solution have been required the rennin may be considered 1 to 15,000; if but 3 Cc. have been required then it is 1 to 25,000, etc. A good rennin powder will test at least 1–25,000 in 7½ minutes by this method. Proc. Pa. Pharm. Assoc., 1905, 192.

Emulsin—Probable Existence in Yeast.—Observations have shown that hydrocyanic acid is furnished by a comparatively large number of plants belonging to a wide range of natural orders, and Dunstan and Henry have shown that this is due to the interaction of a cyanogenetic glucoside with a specific glucoside. In order to devise a general process for the isolation of these cyanogenetic glucosides, T. A. Henry and S. J. M. Auld resorted to the fermentative action of yeast for the purpose of removing the dextrose with which they are associated. On experimenting with a mixture of pure amygdalin and dextrose, a distinct odor of bitter almonds was observed after fermentation with ordinary pressed yeast at a temperature of 40° C. for a few days. This unexpected decomposition called for confirmatory experiments with amygdalin alone. Accordingly 2 Gm. of amygdalin was dissolved in 100 Cc. of water and 6 Gm. of ordinary yeast added, along with a few drops to render antiseptic; a control experiment was made without yeast, both being kept at a temperature of 40°. The flask with yeast in a few days developed the odor of benzaldehyde, which rapidly increased in intensity. The mixture was later distilled, and the presence of benzaldehyde was clearly demonstrated, 33 per cent. of the amygdalin originally present having been decomposed. The control flask showed no such decomposition. From the results of these and numerous other experiments described by the authors, it appears to be clearly indicated that the action of yeast is due to the presence in the yeast cells of an enzyme of the type of emulsin. Experiments on the action of yeast upon a number of other glucosides furthermore show that the glucosides which are decomposed by yeast are those which are also decomposed by emulsin, and that the conditions under which these decompositions are effected by yeast, especially as regards temperature, are the same as in the case of emulsin. They therefore have no reason to doubt that the glucosidolytic activity of yeast is due to the secretion of emulsin in the cells of the plant. —Pharm. Journ., Jan. 6, 1906, 7.

Emulsin—Invariable Presence in the True Roots of Orchids.—According to L. Guignard, emulsin is found to be invariably present in the true roots of all the indigenous French and exotic orchids examined. It is not, however, invariably present in the tubercles; for instance, the palmate tubercles of *Loroglossum hircinum* contain none. It is also of variable occurrence in the leaves, stems, and other aërial vegetable parts. Fresh vanilla pods contain none. The author attributes the liberation of vanillin by the crushed fresh vanilla pod rather to the action of oxidation than to the presence of a ferment like emulsin.—Pharm. Journ., Jan. 6, 1906, 12; from Compt. rend., 1905, *141*, 637.

Mucinase—A Ferment in the Small Intestine.—Roger describes mucinase, a ferment which transforms mucin, coagulating it, and rendering it insoluble in lime water. It is formed in the small intestine, and is obtained by extracting this with glycerin, and precipitating with alcohol. In contact with intestinal mucus it causes coagulation into small clots, but this action does not take place in the presence of bile. This explains why mucus remains fluid in the upper portion of the small intestine, why it coagulates in the large intestine, and why in certain cases of enteritis it is expelled in the form of small concrete masses or in ribbon-like filaments. —Pharm. Journ., Febr. 21, 1906, 227; from Bull. commerc., 1905, *33*, 516.

Mytolin—A New Albuminoid from Flesh.—Heubner describes a new globulin-like body which he has obtained in large quantities from muscles previously deprived of blood-coloring matters and soluble albuminoids by water. The new body, which the author has named "mytolin," was obtained from the muscles, after treatment with water, by extraction with 10 per cent. salt solution and subjecting this to dialysis. So obtained, mytolin is no longer soluble in salt solution, but is readily dissolved by dilute alkalies.—Pharm. Ztg, li, No. 11 (1906), 119; from Münch. Med. Wschr., 1906, No. 5.

Carminfibrin—A New Reagent for the Valuation of Pepsins.—Grützner prepares a new reagent for estimating the digestive value of pepsins by precipitating washed blood-fibrin with an ammoniacal solution of carmine. It forms a dark cherry-red crumbly mass, which swells up in 0.1 per cent. hydrochloric acid without dissolving or giving off any of the carmine, but on addition of some pepsin to the acid mixture the fibrin is dissolved in a shorter or longer time, depending on the quantity and strength of the pepsin, the progress of solution being manifested by the increasing red coloration of the fluid, which takes up the coloring-matter as fast as the fibrin is dissolved. To carry out the test the carminfibrin, which is preserved in glycerin, is washed with water, is completely swelled by immersion in 0.1 per cent. hydrochloric acid, sliced into fine segments by means of scissors, and added to 15 Cc. of 0.1 per cent. hydrochloric acid contained in a vial in such quantity that it occupies a space of 1 to 1.5 Cc. A number of tests being thus prepared, and identical conditions observed in each case, the different pepsin solutions are added, when by comparison of the rate of solution and intensity of color with a standard the strength of the pepsins under examination is conveniently and reliably estimated. To facilitate the solution the vials are reversed from time to time.—Pharm. Ztg., li, No. 30 (1906), 341; from E. Merck's Annual Report, 1905.

Gelatins—A Method of Determining Their Strength.—George C. Waldie observes that the most common method of determining the strength of glues and gelatins seems to be to dissolve equal quantities of each in equal amounts of hot water, in vessels of uniform shape and size: allow the solutions to cool and then by pressing the fingers on the surface of the jelly formed, determine which is the most resistant. That which is, is termed the strongest. This answers very well as a comparative test, but it is difficult to decide just how much stronger or weaker each is, and it is impossible by this means to arrive at a conclusion which can be made intelligible to another person. Several methods have been suggested whereby the strength of gelatin could be given a definite figure—by Lipowitz, Karmarsch, Weidenbusch, Bauschinger, Horn—which are described in

Wagner's Chemical Technology; but all of these methods being unsatisfactory or difficult, the author made an attempt to devise a quicker way of testing in which the conditions could be easily duplicated in future trials.

Procuring a metal funnel without a stem, which happened to be four inches deep and two wide, the orifice was filled until it was one-eighth of an inch in diameter. This was placed in the ring of a retort-stand; above it a thermometer was fastened in a burette-holder, with the bulb well down into the funnel but leaving the orifice perfectly free. Fifty Cc. of 10 per cent. solution of gelatin were made with hot water, allowed to cool to about 100° F., poured through the funnel and caught in a beaker. The solution was then passed through again, this operation being repeated until, with the falling temperature, a jelly was formed of sufficient firmness to prevent it flowing through the funnel. The temperature at which this was found to occur was 84° F. On repeating this experiment five times, identical results were obtained in four, while in one experiment only the congealing temperature was very little lower, viz, 83.5° F. Subsequent application of the method to commercial samples of gelatin confirmed the practicability of the method. The prices of gelatins and glues as a rule advance with the congealing-point. Three samples offered at 27 cents, 30 cents and 35 cents congealed at 74.5°, 77° and 79.5°. Three other samples submitted at 30 cents, 32 cents and 35 cents congealed at 74½°, 73½° and 76° F. The gelatin with which the preliminary experiments were made (congealing at 84° F.) was quoted at 60 cents per pound.—Drugg. Circ., April, 1906, 119.

Adrenalin—Empirical and Structural Formulas, Synthesis, etc.—The recent researches of Aldrich support the conclusion that the empirical formula for adrenalin, $C_9H_{13}O_3N$, heretofore proposed by him, is the correct one, and that adrenalin contains without doubt a pyrocatechin complex, an asymmetric C-atom, three OH-groups, one of which is contained in the side-link, and a CH_3N-group. By the complete methylation and subsequent oxidation of adrenalin, veratric acid and trimethylamine are obtained. The structure of the adrenalin molecule is probably best represented by the formula proposed by Pauly, viz.: $C_6H_3(OH)_21.2.(CHOH.CH_2.NHCH_3)_4$. Under the assumption that this formula is the correct one, starting with pyrocatechin, on treating chloracetopyrocatechin with NH_3, alkylamine and other bases certain compounds have been obtained which qualitatively appear to resemble adrenalin in their physiological properties. Thus, by the reduction of methylaminoacetopyrocatechin, Dakin has obtained a compound yielding salts which give all the reactions of natural adrenalin, although the free synthetic base exhibits certain differences from free adrenalin. The physiological action of the synthetic body is about the same as that of adrenalin. In the course of his own experiments, which are not yet completed, the author himself has obtained compounds which probably are represented by the formula, $C_6H_3(OH)_2$-

$CH(NH_2)CH_3$ and $C_6H_3(OH)_2[CH(NHCH_3).CH_3]$, and which had the physiological effect of adrenalin when injected intravenously. His studies lead him to anticipate the production of a synthetic compound corresponding in its composition to the structural formula of Pauly.—Pharm. Ztg., l, No. 97 (1905), 1019; from Journ. Amer. Chem. Soc., *27*, 1074.

Calf Vaccine—Preparation by the Chloroform Process.—Further experiments conducted by A. B. Green on behalf of the "Local Government Board" show that the optimum temperature for the preparation of vaccine by the chloroform process is about 20° C. The following bacteria, in addition to those mentioned in previous papers, are killed by the chloroform process at 20° C., in from three to eight hours: *Streptococcus pyogenes, B. proteus vulgaris, B. prodigiosus, B. pyocyaneus, B. fluorescens liquefaciens, B. typhosus, B. coli communis, B. diphtheriæ, B. mallei, B. tuberculosis, Spirillum choleræ asiaticæ,* and *Micrococcus miletensis.* The issue of chloroformed vaccine for general vaccination purposes after an average interval of seventeen days had elapsed since its collection from the calf, has been attended with high success. Sixty-nine vaccine emulsions used for 65,735 vaccinations gave primary "case" success 98.6 per cent., "insertion" success 94.0 per cent.; revaccination "case" success 98.0 per cent.; "insertion" success 94.6 per cent. The issue of chloroformed calf-vaccine after an average interval of fifty-four days had elapsed since its collection from the calf has also been attended with high "case" and "insertion" success. Fifteen vaccine emulsions used for 3,615 vaccinations gave total "case" success 98.3 per cent., "insertion" success. 93.0 per cent.—Pharm. Journ., Sept. 16, 1905, 387.

Strychnine Antitoxin—Preparation.—H. Meier has prepared a strychnine antitoxin by injecting gradually increased doses of strychnine into animals (rabbits), until large doses, were tolerated, and then collecting the serum. This serum, when injected simultaneously with lethal doses of strychnine, completely neutralized the toxicity of the latter. The author also finds that the brain substance of animals that were immune to strychnine has the same effect as the serum from such. The immunity lasts for 3 to 4 days or more. Inasmuch as strychnine produces tetanic spasms, the author is of the opinion that a tetanus antitoxin may be produced by means of strychnine injections.—Pharm. Ztg. l, No. 76 (1905), 804; from Berl. Klin. Wschr., 1905, No. 38.

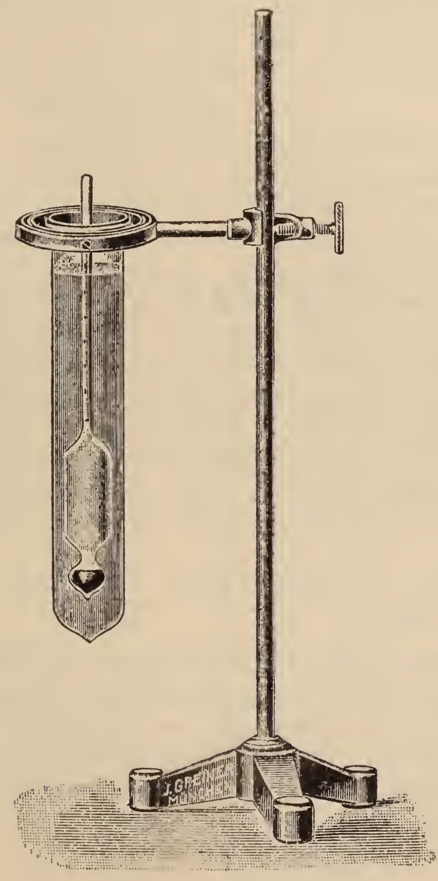
Cerebral Matter—Toxic Constituent.—It has been noticed that the injections of brain-emulsion filtrate, given in the course of anti-rabic treatment, sometimes have a marked debilitating effect on the subject. This has led A. Marie to undertake the investigation of the toxic matter extracted from brain substance. The brain substance was rubbed down with five times its weight of water and filtered first through paper, then through a Berkefeld filter. A clear yellowish neutral liquid is thus obtained. When treated to saturation with ammonium sulphate, it deposits in a few hours a grayish flocculent precipitate, which, being insoluble in water, is washed or dialyzed and dried. This substance is extremely toxic when introduced into guinea-pigs or rabbits by intracerebral inoculation; a sheep's brain, weighing 80 Gm., gives 0.25 to 0.3 Cgm., which is enough to kill 200 guinea-pigs or 100 rabbits. When first inoculated the animal shows no sign of discomfort, but in twenty to twenty-four hours it is suddenly seized with violent epileptiform convulsions. Rabbits sometimes recover. *Post-mortem* examination shows no macroscopic cerebral lesions. The toxicity of this substance is destroyed by heat, and it does not retain its effects on keeping. Subcutaneous, intra-ocular and intra-peritoneal inoculations with it are without the least effect.—Pharm. Journ., Sept. 9, 1905, 361; from Compt. rend., 1905, *141*, 394.

Pulvis Duodenalis—Preparation from the Duodenum of the Pig.—The reported value in cases of diabetes of an acid aqueous extraction of the upper portion of the duodenum of the pig, due to the influence of a peculiar enzyme upon the pancreas, has induced Prosper H. Marsden to experiment with the object of obtaining a more stable preparation than the solution favorably reported on by Dr. J. Hill Abram. The substance existing in the duodenum appears to be something of the type of a pre-enzyme, which, in the preparation above mentioned, is probably converted by the hydrochloric acid into an enzyme. The powder, which has an odor recalling that of pepsin, is obtained by cleansing the upper part of the duodenum of the pig, scraping off the mucous membrane, and drying this at a temperature of 70° to 80° C. in a water oven on glass plates, until the material may be easily detached. So obtained it forms scales, resembling pepsin, which are reduced to powder with one-third their weight of calcium phosphate, passed through a No. 60 sieve, and preserved in well-corked bottles. Further experiment must determine whether this powder is as effective as the preparation upon which the reputation of the material was established.—Pharm. Journ., Feb. 17, 1906, 166.

Urine—Adoption of Standard Tests.—Bourquelot suggested at the recent Congress for Applied Chemistry in Rome, the adoption of a series of standard tests to be generally applied in urine examinations according to the agreed method, as is now customary in analyses of fats and oils: such, for instance, would be the formulation of a ureo-hypobromine reaction, by which the urea is estimated on the basis of the sodium hypobromite consumed. Other reactions might be thus obtained with permanganate, bromine, iodine, and the determination of acidity, etc.—Pharm. Ztg., li, No. 46 (1906), 513.

Urometer—Practical Construction.—Dr. Otto Mayer directs attention to the urometer shown by Fig. 54, which he considers to be in every respect adapted for convenient use even when very small quantities of urine are under examination. These urinometers, which are supplied by Greiner, of Munich, are constructed of normal glass, are carefully and reliably graduated, the degrees running from 1.000 to 1.045, and are provided in the float with a thermometer, exhibiting a reduction scale for temperatures between 5° and 25° C. The dimensions are such that the distances between each degree (1.4 Mm.) admit of the division into half-degrees (0.0005), and the volume of the complete instrument (length, 16 Cm.; scale, 6.2 Cm.; width of float, 1.6 Cm.), permits its introduction and use into cylinders suitable for small quantities of urine. It is important that the latter shall be maintained in an absolutely vertical position, for which the so-called Cardan's suspension apparatus is recommended, and this also is supplied by the above-named manufacturer.—Pharm. Ztg., l, No. 99 (1905), 1044.

FIG. 54.



Uromèter.

Urine—Determination of Indican by Means of Osmic Acid.—A. Gürber recommends osmic acid as oxidizing agent in place of chlorinated lime or ferric chloride in determinations of indican in urine. A test-tube is about one-third filled with the urine, double the volume of concentrated hydrochloric acid is added, then 2 to 3 drops of a one per cent. solution of osmic acid,and the whole is well mixed. In a few seconds a violet, blue-violet, or nearly pure blue color is developed, depending on the amount of indican present. The indigo-blue produced is not affected by the osmic acid until after prolonged standing. In the case of highly colored urines containing only traces of indican, it is recommended to mix the urine with ⅛ volume of liquor plumbi subacetatis, filtering the mixture after standing a short time, and then applying the test to the filtrate. The indigo-blue produced may be shaken out by means of chloroform.—Pharm. Ztg., l, No. 71 (1905), 752; from Münch. Med. Wschr., 1905, No. 33.

Urine—Determination of Indican.—Dr. Otto Mayer recommends Obermayer's test for the determination of indican in urine, which he carries out as follows: To a mixture of 2 Cc. of chloroform and 10 Cc. of the urine, contained in a mixing-cylinder, a mixture of 31 drops of liquor ferri sesquichlorati and 10 Cc. of fuming hydrochloric acid (sp. gr. 1.19 = 36 per cent. HCl) is added, thoroughly mixed and allowed to stand about 5 minutes, when the reaction is usually ended. The cylinder is now turned a number of times, avoiding violent shaking; the chloroform is allowed to subside, the supernatant fluid is decanted, and the chloroform washed with water. In the presence of indican in the urine the chloroform will have acquired a pure blue color, varying in intensity according to the quantity of indican originally present in the sample.—Pharm. Ztg, l, No. 75 (1905), 792.

Urine—Detection of Acetone by Means of Salicylous Acid, which see under "Organic Acids."

Uric Acid—Properties and Therapeutic Uses.—Uric acid is described in E. Merck's Annual Report (1905) as occurring in white crystals, which are very sparingly soluble in water, and are decomposed on heating without previously melting. The acid is recommended for promoting the appetite and as a general tonic in the treatment of tuberculosis.—Pharm. Ztg., li, No. 30 (1906), 341.

APPENDIX.

ALPHABETICAL LIST OF NAMES OF MEMBERS FROM WHOM MONEY HAS BEEN RECEIVED BY THE TREASURER FOR ANNUAL DUES OR CERTIFICATES, FROM JULY 1, 1905, TO JULY 1, 1906.

	Annual Dues.	Certificates.
Abbett, William A. '05	$5 00	
Adamick, Gustave H. '06	5 00	
Adams, James O. '05	5 00	
Alexander, John M. '05	5 00	
Allen, Andrew C. '06	5 00	
Allen, Earl '05	5 00	
Allen, E. Floyd '05–'06	10 00	
Allen, William H '04–'05	10 00	
Allen, William E. '05	5 00	
Allison, Samuel P. '05–'06	10 00	
Allison, William O. '06	5 00	
Amend, Bernard G. '06	5 00	
Anderson, Samuel '05–'06	10 00	
Anderson, William C. '06	5 00	
Anglum, John '05	5 00	
Anspach, Paul B. '05–'06	10 00	
Apple, Franklin M '05–'06	10 00	
Arny, Harry V '06	5 00	
Aron, Frank X '05	5 00	
Aschermann, Gustav S. '05	5 00	
Asher, Philip '05	5 00	
Askew, Alfred J. '05	5 00	
Aughinbaugh, David C. '05	5 00	
Austin, William C. '05	5 00	
Avery, Charles H. '05	5 00	
Avis, James L. '05	5 00	
Bachman, Gustav '06	5 00	
Bacon, Ephraim '05	5 00	
Bailey, Frederick '06	5 00	
Baird, Julian W. '06	5 00	
Baker, Edwin '06	5 00	
Baker, T. Roberts '06	5 00	
Ball, Charles E. '05–'06	10 00	
Ballagh, Wilfred T. '06	5 00	
Balser, Gustavus '06	5 00	
Baltzly, Zachariah T. '05–'06	10 00	
Bandy, George '05	5 00	
Bange, Otto F. '05–'06	10 00	
Bard, William E. '05–'06	10 00	
Barksdale, George E. '03–'04–'05	15 00	
Barnett, Joel J. '04–'05–'06	15 00	
Bartells, George C. '05	5 00	
Bartley, Elias H. '06	5 00	
Base, Daniel '06	5 00	
Bastian, Otto C. '05	5 00	
Batt, Bruno '04	5 00	
Baur, Jacob '05	5 00	
Bayly, Charles A '05	5 00	
Beal, James H '06	5 00	
Bear, Pierce B '05	5 00	
Bechberger, Henry '05–'06	10 00	
Beck, John G. '05	5 00	
Becker, Irwin A. '05–'06	10 00	
Becker, Ulrich W. '06	5 00	
Behrens, Emil C. L. '06	5 00	
Beitenman, William W. '05	5 00	
Bell, Robert N '05	5 00	
Bell, S. Howard '05–'06	10 00	
Amount carried forward	$375 00	

	Annual Dues.	Certificates.
Amount brought forward	$375 00	
Bell, Thomas '05	5 00	
Benfield, Charles W. '05–'06	10 00	
Bent, Edward C '05	5 00	
Benton, Wilber M '05	5 00	
Bentz, Henry G. '05	5 00	
Beringer, George M., Jr. '05–'06	10 00	
Bethea, Oscar W. '06	5 00	
Beyschlag, Charles '06	5 00	
Biggs, Warren H. '05	5 00	5 00
Billings, Henry M. '06	5 00	[illegible]
Blahnik, Marie '05	5 00	7 50
Blaikie, William '05–'06	10 00	
Blakeslee, Louis G '05	5 00	
Blanding, William O. '06	5 00	
Blank, Herman G. '05	5 00	
Bletcher, Henry E. J. '05–'06	10 00	
Blome, Walter H. '06	5 00	
Blumauer, Louis '05	5 00	
Blumenschein, Fred. J. '05–'06	10 00	
Boberg, Otto J. S. '05–'06	10 00	
Boeddiker, Otto '05	5 00	
Boehm, John J. '05	5 00	
Boehm, Solomon '05	5 00	
Boerner, Emil L. '05	5 00	
Bohmansson, Robert H. '06	5 00	
Bollinger, George '05	5 00	
Bond, J. Newlon '05	5 00	
Bond, John B '05	5 00	
Bongartz, Ferdinand A. '06	5 00	
Bonnette, J. Valarus '05	5 00	
Boulton, Emison A. '05	5 00	
Bowman, Waldo M '06	5 00	
Boyd, Charles N. '05	5 00	
Boyd, George W. '05	5 00	
Boyken, John W. '05	5 00	
Boysen, John H. '05	5 00	
Brack, Charles E. '06	5 00	
Bradbury, Wymond H. '05	5 00	
Bradham, Caleb D. '04–'05	10 00	
Bradley, Theodore J. '06	5 00	
Bramblett, Oscar E. '05	5 00	
Brandenberger, Adolph '05	5 00	
Brecht, Frederick A. '06	5 00	
Breslin, Michael T. '05	5 00	
Brewer, Howard D. '06	5 00	
Brickman, Arthur O. '05	5 00	
Briggs, Andrew G. '05	5 00	
Brill, Paul D. '05	5 00	
Brisley, Harry '06	5 00	
Bristow, Thomas G '05	5 00	
Brookes, Virginia C. '05	5 00	
Brooks, George W. '05	5 00	
Brown, Charles M. '05	5 00	
Brown, George S. '03	5 00	
Brown, John C. '05	5 00	
Brown, J. Lee '05	5 00	
Brown, John O.	....	5 00
Amount carried forward	$690 00	$17 50

	Annual Dues.	Certificates.
Amount brought forward	$690 00	$17 50
Brucker, Carl '06	5 00	
Brudder, Otto E. '05	5 00	
Brandage, Albert H. '05	5 00	
Bryson, William S. '06	5 00	
Buckner, John C '05	5 00	
Burgheim, Jacob '05	5 00	
Burke, William H. '06	5 00	
Burnbam, Alfred A., Jr. '06	5 00	
Burnham, Ralph F. '05-'06	10 00	
Burton, John C. '04	5 00	
Butler, Freeman H. '06	5 00	
Caine, S. Lee '05-'06	10 00	
Calkins, Eleazer F. '06	5 00	
Campbell, Charles B. '05	5 00	
Campbell, George S. '05	5 00	
Campbell, William L. '05	5 00	
Carter, Frank H. '05	5 00	
Carter, Fred. L. '06	5 00	
Caspari, Charles, Jr. '06	5 00	
Caspari, Charles E. '05	5 00	
Cassaday, O. U. '05	5 00	
Castlehun, Karl '06	5 00	
Claflin, Walter A. '05-'06	10 00	
Clapp, Lowell T. '05	5 00	
Clark, Albert H '05	5 00	
Clark, Harry S '05	5 00	
Clark, John A. '05	5 00	
Clarke, Charles J. '05	5 00	
Claverie, Joseph S. '05	5 00	
Claybaugh, Springer '05	5 00	
Cliffe, William L. '05-'06	10 00	
Cline, Raoul R. D. '06	5 00	
Cloonan, Martin J '05	5 00	
Clothier, Charles R. '05	5 00	
Cobb, Henry C. '05	5 00	
Cobb, Ralph L '06	5 00	
Coblentz, Virgil '05	5 00	
Cohn, Alfred I. '05	5 00	
Colby, Charles L. '05-'06	10 00	
Coleman, John '05-'06	10 00	
Collins, Albert N. '05	5 00	
Collins, Frank A. '05	5 00	
Collins, Mary E. '05	5 00	
Comfort, Newton E. '05-'06	10 00	
Congdon, George G. '06	5 00	
Conzet, Rufus W '06	5 00	
Cooban, Benjamin S. '06	5 00	
Cook, Alfred P '05	5 00	
Coonley, Charles '05	5 00	
Cooper, Oscar H. '05	5 00	
Cornell, Edward A. '05	5 00	
Corning, Albion J. '06	5 00	
Crain, Z. A. '05	5 00	
Crampton, Ferd L. '05	5 00	
Crawford, Frank E '05	5 00	
Crawford, Joseph '05	5 00	
Creighton, Mary L. '05	5 00	
Criswell, Francis M. '05	5 00	
Cross, Elias H. '05	5 00	
Crowdle, John E. '04-'05	10 00	
Culpepper, Thomas J. '05	5 00	
Cummings, John A. '05	5 00	
Curry, David W. '05	5 00	
Cutler, Bertram C. '05	5 00	
Daboll, Horace H '06	5 00	
Dadd, Robert M. '06	5 00	
Dahlin, Horace O. '05	5 00	
Darbaker, Leasure K. '05	5 00	
Davis, Charles H. '05	5 00	
Davis, Charles L. '06	5 00	
Davis, Emma M. '05	5 00	
Davis, George B. '05	5 00	
Davis, George W. '05	5 00	
Davis, John A. '04-'05	10 00	
Dawson, John H. '05	5 00	
Amount carried forward	$1100 00	$17 50

	Annual Dues.	Certificates.
Amount brought forward	$1100 00	$17 50
Day, Edward J '06	5 00	
Day, William B. '05-'06	10 00	
Deakyne, Harry H. '05	5 00	
De Lang, Alfred '04-'05	10 00	
De Lorenzi, Albert '04-'05	10 00	
de Monsabert, Arthur C. '05	5 00	
Deck, Lewis C. '06	5 00	
Depeyre, Louis N. '04-'05-'06	15 00	
Dewender, William H. '06	5 00	
Dewoody, William L. '06	5 00	
Diamond, Peter '05	5 00	
Dickinson, Arthur L. '04-'05	10 00	
Dicks, Frederick A. '05-'06	10 00	
Diebert, Thomas L. '05-'06	10 00	
Dieden, Frank X. '05	5 00	
Diekman, George C. '06	5 00	
Dimond, Harry J. '06	5 00	
Dinkler, Frank A. '05	5 00	
Dixon, J. Marion '06	5 00	
Dodds, Richard N. '05-'06	10 00	
Doehne, George, Jr. '05	5 00	5 00
Dohme, Alfred R. L. '06	5 00	
Dohme, C. Louis '03-'04-'05	15 00	
Donohue, Henry '05	5 00	
Dort, Edward H. '06	5 00	
Dow, John P. '05	5 00	
Downing, Benjamin F., Jr. '05	5 00	
Dozier, William A. '05	5 00	
Drescher, August '05	5 00	
Drossel, August A. '05	5 00	
Drucker, August E. '05	5 00	
Du Bois, William L. '05	5 00	
Duering, Henry C. '05-'06	10 00	
Duggan, James '03-'04-'05	15 00	
Dulaney, Joseph F. '05	5 00	
Dunning, H. A. Brown '06	5 00	
Durban, Sebastian C. '03	5 00	
Durkee, William C. '05	5 00	
Dutcher, Alfred L. '05	5 00	
Dutmers, Cornelius J. '05	5 00	
Dutt, William '05	5 00	
Dye, Clair A. '05-'06	10 00	
Easterday, Herbert C. '05	5 00	
Ebbs, John B. '05-'06	10 00	
Eberle, Eugene G. '06	5 00	
Eccles, Robert G. '05-'06	10 00	
Eckert, John '05	5 00	
Eckler, Charles R. '04-'05	10 00	
Eckstein, Andrew J. '06	5 00	
Egge, Julius K. '05	5 00	
Eichold, Bernard H. '05	5 00	
Eichrodt, Charles W '05	5 00	
Eldred, Frank R. '05	5 00	
Elfstrand, Wilhelm '05-'06	10 00	
Eliel, Leo '05-'06	10 00	
Elkin, William S. '05	5 00	
Elliott, Charles H. '05	5 00	
Ely, Ernest S. '05	5 00	
Emanuel, Louis '05	5 00	
England, Joseph W. '05	5 00	
England, Thomas M. '05	5 00	
Englander, Samuel '05-'06	10 00	
Eppstein, Jacob '04	5 00	
Euler, Frederick C. '05	5 00	
Evans, Joseph S '05	5 00	
Evans, William J. '05-'06	10 00	
Eyssell, George '05	5 00	
Fairchild, Benjamin T. '06	5 00	
Fairchild, Samuel W. '06	5 00	
Famulener, Lemuel W. '05	5 00	
Fawcett, Charles E. '06	5 00	
Federmann, William M. '06	5 00	
Feick, Charles '04-'05	10 00	
Feidt, George D '05	5 00	
Feil, Joseph '05	5 00	
Amount carried forward	$1600 00	$22 50

	Annual Dues.	Certificates.
Amount brought forward.....	$1600 00	$22 50
Feinberg, Maurice M.........'05	5 00	
Fennel, Charles T. P.....'04-'05	10 00	
Ferguson, George A......'05-'06	10 00	
Fickardt, Fred. E............'05	5 00	
Field, Claud.................'05	5 00	
Finch, Charles S............'05	5 00	
Fink, Daniel J..............'06	5 00	
Fischer, Albert..............'05	5 00	
Fischer, Henry..........'05-'06	10 00	
Fischnar, John F....... ....'05	5 00	
Fisher, George W.......... '06	5 00	
Fisk, Frank E..... ....'05	5 00	
Fleischner, Charles ......'05-'06	10 00	
Flemer, Lewis ....'05	5 00	
Fletcher, David M...........'05	5 00	
Fletcher, John W..... ..... '05	5 00	
Flowers, Hiland ....'05-'06	10 00	
Fly, Anthony................'05	5 00	
Flynn, Cornelius P.... .....'05	5 00	
Ford, Myron N.............'05	5 00	
Forsyth, William K.........'05	5 00	
Foulke, James..............'06	5 00	
Fox, Willard M. .... '05	5 00	
Frames, J. Fuller............'05	5 00	
Franzoni, Joseph D.........'05	5 00	
Frazer, Horatio N...........'05	5 00	
Frauer, Herman E.......... '05	5 00	
Freerichs, Frederick W......'06	5 00	
Freericks, Frank H..........'05	5 00	
French, Rolland H..........'05	5 00	
Fricke, Frederick G.........'05	5 00	
Fricke, Frederick H..........05	5 00	
Friedenburg, M. W......'05-'06	10 00	7 50
Frost, William A............'05	5 00	
Gable, Ralph B..........'04-'05	10 00	
Gaesser, Theobald T.........'06	5 00	
Gale, Abram ....'05	5 00	
Gallagher, John C...........'06	5 00	
Gallenkamp, Edward W......'05	5 00	
Gane, Eustace H.. .. ..'06	5 00	
Ganz, William H.........'05-06	10 00	5 00
Gape, Arthur G..............'05	5 00	
Garber, Elmer F. W.........'06	5 00	
Garrett, Oscar N............'05	5 00	
Garver, Christian ....'05	5 00	
Garvin, Patrick J.......... '05	5 00	7 50
Gathercoal, Edmund N......'05	5 00	
Gaus, Charles H............'06	5 00	
Gausby, Robert A..........'06	5 00	
Gayle, John W..............'06	5 00	
Geisler, Joseph F............'05	5 00	
Geisler, Lee W., Jr. ....'05	5 00	
Gertler, John H.............'05	5 00	
Gessner, Emil A......... ...'06	5 00	
Gibson, Frank L..... ...'05-'06	10 00	
Gietner, Charles ....'05	5 00	
Gilpin, Henry B.........'05-'06	10 00	
Gleason, Patrick S...........'05	5 00	
Glover, William H..........'05	5 00	
Godding, John G............'06	5 00	
Goldsborough, Charles H....'05	5 00	
Goodale, Harvey G..........'05	5 00	
Gordin, Harry M........'05-'06	10 00	
Gordon, Jean. ....'05	5 00	
Gordon, William C..........'05	5 00	
Gorgas, George A...........'06	5 00	
Grace, William D............'05	5 00	
Grassley, Charles W.........'05	5 00	
Gray, Margaret M'C.........'05	5 00	
Gray, William...............'05	5 00	
Grazer, Fred. A....... .....'05	5 00	
Green, Benjamin ....'06	5 00	
Green, Edward T............'05	5 00	
Green, William R...........'05	5 00	
Greenthal, Julius........'04-'05	10 00	
Amount carried forward.....	$2035 00	$42 50
Amount brought forward.....	$2035 00	$42 50
Gregorious, George......'04-'05	10 00	
Grewe, Louis F.............'06	5 00	
Grever, Julius......... .....'06	5 00	
Griffith, Charles..... ....'05	5 00	
Gross, Charles E............'05	5 00	
Gross, William O............'05	5 00	
Groves, Henry C............'05	5 00	
Guerin, James F.........'05-'06	10 00	
Guidry, Ambrose J... ......'05	5 00	
Gundrum, George........'05-'06	10 00	
Haake, William H ....,06	5 00	
Haddad, Saleem F...........'06	5 00	
Hagans, Daniel A...........'05	5 00	
Hagee, William P........'05-'06	10 00	
Hagenow, Theo. F.'02-'03-'04-'05	20 00	
Hahn, Charles W. J. H......'05	5 00	
Hain, Frank W. A...........'05	5 00	
Haley, John B...............'05	5 00	
Hall, Edwin B...... ....'06	5 00	
Hall, Guy P............. ..'05	5 00	
Hall, Joseph P..............'05	5 00	
Hall, William A.............'05	5 00	
Hallberg, Carl S. N..........'05	5 00	
Hallaway, Robert R.........'05	5 00	
Halstead, Alice L...........'06	5 00	
Hammar, Alrick. ....'06	5 00	
Hammond, E. Emmet........'05	5 00	
Hamrick, Charles B.........'05	5 00	
Haney, Thomas C...........'06	5 00	
Hankey, William T..........'06	5 00	
Hannan, Owen B. '03-'04-'05-'06	20 00	
Harbaugh, Wilson L..'04-'05-'06	15 00	
Harbold, John T ....'05	5 00	
Harper, Charles B...........'06	5 00	
Harrison, Robert L..'03-'04-'05	15 00	
Harrison, William H........'05	5 00	
Harrison, William J.........'05	5 00	
Harter, Isaac F........ .....'05	5 00	
Hartigan, Joseph D......'05-'06	10 00	
Hartman, Frank C...........'05	5 00	
Hartz, J. D. August.........'06	5 00	
Hatcher, Robert A .....'05-'06	10 00	
Hatton, Edgar M........ ...'06	5 00	
Hatton, Elmer W...........'06	5 00	
Hauenstein, William.....'05-'06	10 00	
Havenhill, L. D....... .....'06	5 00	
Hay, Charles L..........'04-'05	10 00	
Hay, Edward A.............'06	5 00	
Haydock, Susannah G.......'05	5 00	
Hayes, Horace P............'06	5 00	
Haynes, David O............'05	5 00	
Hays, Francis B.........'05-'06	10 00	
Hayter, John P.............'05	5 00	
Hazard, Elmer C............'05	5 00	7 50
Hebert, Joseph H ....'05	5 00	
Hechler, Edward H......'05-'06	10 00	
Heebner, Charles F..........'05	5 00	
Heidbreder, Albert H........'06	5 00	
Heineman, Albert F.........'05	5 00	
Heinitsh, Sigmund W... ...'05	5 00	
Heinritz, Lebrecht G ....'06	5 00	
Helfman, Joseph ....'06	5 00	
Hemm, Francis .... '05	5 00	
Hengst, J. Edwin ....'06	5 00	
Henkel, Alice...............'05	5 00	
Henkel, Charles B...........'05	5 00	
Henne, Lewis E.............'05	5 00	
Henning, Adolph............'05	5 00	
Henry, Charles..........'05-'06	10 00	
Henry, Frank C.............'05	5 00	
Hepburn, John..............'06	5 00	
Herb, Joseph ....'05	5 00	
Herbst, William P........ ..'05	5 00	
Hermanek, Joseph C . .....'06	5 00	
Hess, Paul L......... .....'05	5 00	
Amount carried forward	$2515 00	$50 00

	Annual Dues.	Certificates.
Amount brought forward	$2515 00	$50 00
Heuisler, Philip I. ’05	5 00	
High, Raymond L. ’05	5 00	
Hilton, Samuel L. ’05	5 00	
Hinton, Rufus G. ’05	5 00	
Hiriart, Sebastian ’05	5 00	
Hitchcock, George H ’05	5 00	
Hitchcock, John E ’05	5 00	
Hoch, Aquila ’05	5 00	
Hodgkinson, Albert E. ’05–’06	10 00	
Hodgson, Joseph A ’06	5 00	
Hoelzer, Bruno A. C. ’05	5 00	
Hoffman, George F ’05–’06	10 00	
Holloway, Jesse D. ’05	5 00	
Holmes, Henry E. ’05–’06	10 00	
Holt, Julian W ’05	5 00	
Hood, Charles I. ’06	5 00	
Hood, William D. ’05–’06	10 00	
Hook, James P. ’05–’06	10 00	7 50
Hoover, George W. ’05	5 00	
Hope, Robert L. ’05	5 00	
Hopkins, Jesse L. ’05	5 00	
Hopp, Lewis C. ’05	5 00	
Horlick, Alexander J. ’06	5 00	
Horn, Wilbur F. ’05	5 00	
Horne, Warren W. ’05	5 00	
Houck, Paul W. ’05	5 00	
Houghton, E. Mark ’05	5 00	
Hover, William A. ’06	5 00	
Howard, Mrs. Fletcher ’05	5 00	
Howard, Henry ’05	5 00	7 50
Howell, Edward V. ’05	5 00	
Hoyt, George M. ’05	5 00	
Huder, Henry J. ’06	5 00	
Hudnut, Richard A. ’06	5 00	
Hudson, Arthur ’05	5 00	
Huested, Alfred B. ’05	5 00	
Humphries, John R. ’05	5 00	
Hunsberger, Ambrose ’05	5 00	
Hunt, Reid ’05	5 00	
Hurd, John C. ’06	5 00	
Hurlebaus, George W. ’05	5 00	
Hurty, John N. ’05	5 00	
Huston, Thomas B. ’06	5 00	
Hutchinson, Currie J. ’05	5 00	
Hynson, Henry P. ’06	5 00	
Iltis, George W. ’05–’06	10 00	
Ink, Charles E. ’03–’04	10 00	
Isakovics, Alois von ’05	5 00	
Jackman, Wilbur F. ’06	5 00	
Jackson, Frank A. ’06	5 00	
Janssen, Jacob S. ’06	5 00	
Jaynes, Charles P. ’06	5 00	
Jaynes, Charles W. ’06	5 00	
Jelliffe, Smith E. ’03–’04–’05–’06	20 00	
Joergensen, Sophus ’05	5 00	
Johnson, Charles W. ’06	5 00	
Johnson, Ralph H. ’05	5 00	
Jones, David F. ’04–’05	10 00	
Jones, James T. ’04	5 00	
Jones, Oscar W. ’06	5 00	
Jones, Philip M. ’04–’05	10 00	
Jones, William D. ’04–’05–’06	15 00	
Jorden, Henry A. ’06	5 00	
Jorgenson, Edward B. ’05	5 00	
Judge, Charles R. ’06	5 00	
Junger, William F. F. ’03–’04	10 00	
Kaemmerer, William F. ’06	5 00	
Kahn, Solomon K. ’05	5 00	
Kalish, Oscar G. ’06	5 00	
Kalusowski, Henry E. ’05	5 00	
Katz, Otto ’05	5 00	
Kauffman, George B. ’06	5 00	
Keaney, James J. ’04–’05–’06	15 00	
Kebler, Lyman F. ’05	5 00	
Keenan, Thomas J. ’05	5 00	
Amount carried forward	$2975 00	$65 00
Amount brought forward	$2975 00	$65 00
Kelley, John J. ’05	5 00	
Kelley, Reuben B. ’05	5 00	
Kelly, E. Frank ’05	5 00	
Kemp, Edward ’06	5 00	
Kendall, Wallace W. ’05–’06	10 00	
Kennedy, Ezra J. ’05	5 00	
Kent, Henry A. ’05	5 00	
Kephart, Philip ’05	5 00	
Kerr, Frederick W. ’05	5 00	
Kester, Joseph A. ’06	5 00	
Kettler, Edward, Jr. ’06	5 00	
Kiedaisch, George A. ’06	5 00	
King, George A. N. ’05	5 00	
Kingman, Ignatius ’05	5 00	
Kinnison, Virgil A. ’05	5 00	
Kirchgasser, William C. ’05–’06	10 00	
Kirchgessner, William C. ’05–’06	10 00	
Kirk, James E. ’05	5 00	
Klein, Edward N. E. ’05–’06	10 00	
Klein, Ernest F. ’06	5 00	
Kleinschmidt, Augustus A. ’05–’06	10 00	
Klenze, William T. ’05	5 00	
Klie, G. H. Charles ’05	5 00	
Klor, Alexander E. G. ’05	5 00	
Knabe, Gustavus A. ’05	5 00	
Kniseley, Herman D. ’05	5 00	
Knoebel, Thomas ’06	5 00	
Knoefel, Bruno ’06	5 00	
Knoefel, Charles D. ’05	5 00	
Koch, August F ’06	5 00	
Koch, Julius A. ’05	5 00	
Koelle, Otto C. ’05–’06	10 00	
Koeneke, Charles H ’03–’04	10 00	
Kolsch, Julius ’06	5 00	
Kornmann, Henry ’04–’05	10 00	
Krembs, Ernest M ’06	5 00	
Kremers, Edward ’06	5 00	
Kuder, William F. ’05–06	10 00	
Kuehne, Charles ’06	5 00	
Kurtz, Irving W. ’05	5 00	
Kutchbauch, John F. ’06	5 00	
Kutscher, George W. ’05	5 00	
LaGrange, John V. ’05	5 00	
LaPierre, Elie H. ’05	5 00	
Lachance, Seraphim ’04–’05	10 00	
Ladish, Erich H. 05	5 00	
Lamar, William R. ’05	5 00	
Lampa, Robert R. ’05	5 00	
Land, Robert H., Jr. ’05	5 00	
Lascoff, J. Leon ’05	5 00	
Laue, John M. A. ’06	5 00	
Lauricella, Felice ’05	5 00	
LeRicheux, Alfred G. ’05	5 00	
Leavitt, Adoniram J. ’05–’06	10 00	5 00
Leber, J. Gilbert ’05	5 00	
Lebovitz, Louis ’05	5 00	
Lee, William E. ’05	5 00	
Leeb, Theodore F. ’05	5 00	
Lehman, Louis ’05	5 00	
Lehr, Philip ’06	5 00	
Lehritter, George P. ’04–’05	10 00	
Leiper, James A., Jr. ’05	5 00	3 75
Lemasters, William O. ’06	5 00	
Levinson, Joseph ’05	5 00	
Levy, Adolph ’05–’06	10 00	
Lichthardt, George H. P. ’05	5 00	
Lillie, Foress B. ’06	5 00	
Lilly, Josiah K. ’05	5 00	
Lindly, John M. ’05	5 00	
Lindvall, Gus ’06	5 00	
Loehr, Theodore C. ’03–’04–’05	15 00	
Lohmann, Hermann J. ’03–’04–’05	15 00	
Lohmann, John ’05–’06	10 00	
Lord, Frederick W. ’05	5 00	
Lough, Thomas W. ’05	5 00	
Amount carried forward	$3440 00	$73 75

	Annual Dues.	Certificates.
Amount brought forward	$3440 00	$73 75
Loussararian, A. H. '05	5 00	
Lovis, Henry C '03-'04-'05	15 00	
Lowell, Edward M. '06	5 00	
Lyons, Albert B. '05	5 00	
Lyons, Lucien E '06	5 00	
Mackey, James C. '05	5 00	
Macnair, Whitmel H. '03-'04-'05	15 00	
Macy, Sherman R. '04-'05	10 00	
Maguire, Edward S. '06	5 00	
Maguire, Thomas J '05	5 00	
Maisch, Henry. '05	5 00	
Major, John R. '05	5 00	
Mallinckrodt, Edward '06	5 00	
Malloy, Michael J '05	5 00	
Maloney, Patrick J '05	5 00	
Mann, Charles F. '06	5 00	
Manns, Albert G '05	5 00	
Mansfield, Samuel '05	5 00	
Mares, Frank M. '05	5 00	
Mariamson, Max '05	5 00	
Marion, Etienne J '05-'06	10 00	
Martin, David G. '05	5 00	
Martin, John F. '05-'06	10 00	5 00
Martin, Nicholas H. '06	5 00	
Mason, Harry B. '05	5 00	
Mason, Myron R. '05	5 00	
Mathison, Soren '05	5 00	
Matson, George H., Jr. '05-'06	10 00	
Matthews, Charles E. '05-'06	10 00	
May, Charles C. '04-'05	10 00	
May, Edward '05	5 00	
May, Louis '06	5 00	
Mayer, Joseph L. '05-'06	10 00	
Mayo, Caswell A. '05	5 00	
McArthur, James W. '05	5 00	
McBride, Charles R. '05	5 00	
McCauley, Charles E. '05	5 00	
McConaughy, Thomas S. '05	5 00	7 50
McConnell, Charles H. '06	5 00	
McConnell, Lewis W. '06	5 00	
McDonald, Harry S. '05	5 00	
McElhenie, Thomas D. '05	5 00	
McGarr, Cuvier L. '05	5 00	
McGill, John T. '06	5 00	
McIntyre, Ewen '06	5 00	
McKay, Felix E. '05	5 00	
McKay, Malcolm '05	5 00	
McKinney, Robert S. '03	5 00	
McMahon, Joseph '06	5 00	
Mehl, Henry W. '05	5 00	
Menk, Charles W. '05	5 00	
Merrell, Charles G. '06	5 00	
Merrell, George '06	5 00	
Merrell, Hubert S. '06	5 00	
Merrem, Charles D. '05-'06	10 00	
Mertz, Edward L. '05	5 00	
Meserve, Albert W. '05	5 00	
Metcalfe, Alexander H. '05	5 00	
Meyer, Adolph C. '05-'06	10 00	
Meyer, Charles L. '04-'05	10 00	
Meyer, Martin M. '05-'06	10 00	
Meyer, Theodore F. '06	5 00	
Michaelis, Gustavus '06	5 00	
Mieding, Albert E. '06	5 00	
Mikkelson, Niels '04-'05	10 00	
Millener, William S. '05-'06	10 00	
Miller, Charles E. '05-'06	10 00	
Miller, Emerson R. '05	5 00	
Miller, Frederick J '05	5 00	
Miller, F. William '05	5 00	
Miller, Jacob A. '05	5 00	
Miller, Mark E. '05	5 00	
Miller, T. Ashby '06	5 00	
Miner, Maurice A. '05	5 00	
Mitermiler, John A '05	5 00	
Amount carried forward	$3905 00	$86 25
Amount brought forward	$3905 00	$86 25
Mittelbach, William '06	5 00	
Moore, John T. '05	5 00	
Morgan, Thomas, Jr. '05	5 00	
Morin, Ludger J. '05	5 00	
Morron, George S. '05	5 00	7 50
Morse, Edward W. '06	5 00	
Morse, Frank D. '06	5 00	
Mosher, William W. '05	5 00	
Moulder, Bettie L. '05	5 00	
Mueller, Ambrose '05-'06	10 00	
Muench, William '06	5 00	
Muhlhan, Otto E. '05-'06-'07	15 00	
Murray, Julius V. '05	5 00	
Muth, George L. '06	5 00	
Muth, John C. '06	5 00	
Muth, John S. '06	5 00	
Myers, Carvosso O. '05	5 00	
Nance, Fuller '05	5 00	
Neal, Thomas L. '05	5 00	
Neeley, Guy M. '05	5 00	
Nelson, Edwin H. '06	5 00	
Newton, Clarke H. W. '05-'06	10 00	
Nichols, Thomas B. '04-'05	10 00	
Nicholson, Gilbert W '05	5 00	
Niece, Frederick E. '05	5 00	
Nielson, John. '05-'06	10 00	
Nipgen, Frank M. '06	5 00	
Noll, Martin J. '05	5 00	
Noll, Mathias '05	5 00	
Nordlander, Anders G. E. '05	5 00	
Norton, George E. '05	5 00	
O'Connell, Charles, Jr. '05	5 00	
O'Gorman, Theophilus V. '06	5 00	
O'Hare, James '05-'06	10 00	
O'Neil, Henry M. '06	5 00	
Ogier, William R. '06	5 00	
Oglesby, George D. '05	5 00	
Ohliger, Willard. '05	5 00	
Oldberg, Oscar '06-'07	10 00	
Oliver, William M. '05-'06	10 00	
Orear, Edwin G. '05	5 00	
Ortiz, Miguel A. '05	5 00	
Orton, Ingomar F. '06	5 00	
Osseward, Cornelius '05	5 00	
Otto, Theodor G. E. '06	5 00	
Oxford, Albert '05	5 00	
Paddock, Morris V. '05	5 00	
Palmer, J. Dabney '06	5 00	
Parker, Frederick M. '05-'06	10 00	
Parmalee, Walter W. '05	5 00	
Parramore, George B. '05	5 00	
Patch, Edgar L. '05	5 00	
Patch, James A. '05	5 00	
Patten, Eustis '05	5 00	
Patterson, Charles W. '05	5 00	
Patton, John F. '06	5 00	
Pauley, Frank C. '05	5 00	
Pearce, Howard A. '06	5 00	
Pearson, Joseph F. '05-'06	10 00	
Pease, Autumn V. '05-'06	10 00	
Peck, George L. '06	5 00	
Peck, Percy S. '05-'06	10 00	
Pederson, George M. '05	5 00	
Perkins, Benjamin A. '05-'06	10 00	
Perry, Frederick W. R. '05	5 00	
Peters, Henry A. '05	5 00	
Pfaff, Franz. '06	5 00	
Pfefferle, Eugene A. '05	5 00	
Pfluger, Henry C. '04-'05	10 00	
Phillips, Carrie E. '05	5 00	
Pieck, Edward L. '06	5 00	
Pierce, Fred '04-'05	10 00	
Pierce, William H. '06	5 00	
Pile, Gustavus '05	5 00	
Pirie, Alfred M. '05-'06	10 00	
Amount carried forward	$4365 00	$93 75

		Annual Dues.	Certificates.
Amount brought forward		$4365 00	$93 75
Pitt, John R.	'05	$5 00	
Placak, Harry	'06	5 00	
Plaut, Albert	'06	5 00	
Polk, Martin L.	'05	5 00	
Pond, Raymond H.	'05	5 00	
Porter, Martin L.	'05	5 00	
Posey, Henry G.	'05	5 00	
Powell, William C.	'05	5 00	
Prall, Delbert E.	'06	5 00	
Price, Charles H.	'06	5 00	
Price, Joseph	'06	5 00	
Prior, Toney	'05	5 00	
Puckner, William A.	'06	5 00	
Quackinbush, Benj. F.	'06	5 00	
Queeny, John F.	'05-'06	10 00	
Quigley, Richard L.	'05	5 00	
Rabak, Frank	'05-'06	10 00	
Raeuber, Edward G.	'06	5 00	
Ramsaur, David W.	'04-'05	10 00	
Randall, Frank O.	'05	5 00	
Rapelye, Charles A.	'05	5 00	
Rauschkolb, John	'05-'06	10 00	
Redsecker, Jacob H.	'06	5 00	
Reemie, Edgar W.	'05	5 00	
Reidy, Michael	'05-'06	10 00	
Reimann, George	'05	5 00	
Remington, J. Percy	'05	5 00	
Renfroe, Harris B.	'05	5 00	
Reymond, John P.	'05	5 00	
Rhode, Rudolph E.	'06	5 00	
Rich, W. Pitt	'06	5 00	
Richard, Valleix B.	'05	5 00	
Richardson, Horatio S.	'06	5 00	
Richardson, Samuel W.	'05	5 00	
Richardson, Willard S.	'05	5 00	
Richtmann, William O.	'05	5 00	
Ridgway, William F.	'06	5 00	
Riess, Hermann W.	'06	5 00	
Riley, Cassius M.	'05-'06	10 00	
Riley, Russell	'05	5 00	
Ritter, Clyde	'05	5 00	
Robertson, Felix O.	'05	5 00	
Robins, Wilbur F.	'05	5 00	
Robinson, Henry S.	'06	5 00	
Robinson, William J. M.	'05	5 00	
Rockefeller, Howard	'06	5 00	
Rodemoyer, William E.	'05	5 00	
Roe, J. Newton	'05	5 00	
Roehrig, Albert M.	'05	5 00	
Roeller, Edward F.	'05-'06	10 00	
Rogers, Arthur H.	'05	5 00	
Rogers, Edward	'05	5 00	
Rosenthal, David A.	'05-'06	10 00	
Rosenzweig, Benjamin	'06	5 00	
Roth, Charles R.	'05	5 00	
Rounds, Marvin B. C.	'05	5 00	
Roush, Frederick A.	'06	5 00	
Rowlinski, Robert A.	'05	5 00	
Roziene, Robert P. M.	'05	5 00	
Ruenzel, Henry G.	'06	5 00	
Runkel, Julia	'05	5 00	
Russell, Hamilton	'05	5 00	
Rust, Schuyler S.	'05-'06	10 00	
Ryan, Frank G.	'06	5 00	
Saccar, Michael	'05	5 00	
Sala, Albert F.	'05	5 00	
Sandholm, John A.	'05	5 00	
Sarradet, Atal A.	'05	5 00	
Sauerbrun, Otto O.	'05-'06	10 00	
Sawyer, Charles H.	'06	5 00	
Sawyer, Edward S.	'05	5 00	
Sayre, Edward A.	'05	5 00	
Sayre, Lucius E.	'05-'06	10 00	
Schadt, Conrad	'05	5 00	
Schaefer, Emil A.	'06	5 00	
Amount carried forward		$4795 00	$93 75

		Annual Dues.	Certificates.
Amount brought forward		$4795 00	$93 75
Schaffer, Charles	'04-'05	$10 00	
Schaper, Henry F.	'05	5 00	
Scherer, Andrew	'06	5 00	
Scherling, Gustav	'05-'06	10 00	
Scheuber, Frank A.	'06	5 00	
Schieffelin, William J.	'06	5 00	
Schimpf, Henry W.	'06	5 00	
Schlotterbeck, Augustus G.	'06	5 00	
Schlotterbeck, Julius O.	'06	5 00	
Schleuter, Robert E.	'06	5 00	
Schmid, Henry	'05	5 00	
Schmidt, Ferdinand T.	'05-'06	10 00	
Schmidt, Florian C.	'06	5 00	
Schmidt, Frederick M.	'06	5 00	
Schmidt, Henry	'06	5 00	
Schmidt, Valentine	'05	5 00	
Schmidt, Walter K.	'05	5 00	
Schmitt, George J. F.	'06	5 00	
Schmitter, Jonathan	'05	5 00	
Schoenhut, Christie H.	'06	5 00	
Schrank, C. Henry	'06	5 00	
Schreiber, August	'05	5 00	
Schreiner, Oswald	'05	5 00	
Schrodt, Jacob	'05	5 00	
Schueller, Frederick W.	'06	5 00	
Schuh, Paul G.	'06	5 00	
Schultz, John J.	'06	5 00	
Schulz, Henry L.	'05	5 00	
Schulze, Louis	'06	5 00	
Schumann, Otto G.	'06	5 00	
Scott, Clarence A.	'05	5 00	
Scott, Edgar B.	'05	5 00	
Scott, Henry R.	'05	5 00	
Scott, William H.	'06	5 00	
Scoville, Wilbur L.	'06	5 00	
Seaman, Frederick A.	'05-'06	10 00	$5 00
Searby, William M.	'05	5 00	
Seaverns, Martha G.	'05	5 00	
Seinsoth, John J.	'05	5 00	
Seitz, Lorenz A.	'06	5 00	
Seltzer, Leonard A.	'06	5 00	
Selzer, Eugene R.	'06	5 00	
Sennewald, Emil A.	'06	5 00	
Shannon, Thomas J.	'05	5 00	
Sharp, Sol A.	'05	5 00	
Sharples, Stephen P.	'04-'05	10 00	
Sheridan, William F.	'05	5 00	
Sherman, Charles R.	'06	5 00	
Sherrard, Charles C.	'03	5 00	
Sherwood, Henry J.	'06	5 00	
Shimer, Samuel M.	'06	5 00	
Shreve, John A.	'04-'05	10 00	
Shudrowitz, Frank S.	'05	5 00	
Siegenthaler, Harvey N.	'04-'05	10 00	
Siegfried, Henry J.	'05-'06	10 00	
Sieker, Ferdinand A.	'05	5 00	
Sieplin, Charles A.	'05	5 00	
Simmons, Frank B.	'03-'04	10 00	
Simmons, Gustav T.	'05	5 00	
Simon, William	'06	5 00	
Simson, Francis C.	'05	5 00	
Skinner, William H.	'05	5 00	
Slade, Harry A.	'06	5 00	
Slater, Frank H.	'05	5 00	
Sloss, Robert A.	'06	5 00	
Small, Herbert E.	'03	5 00	
Smith, B. Frank	'06	5 00	
Smith, Clarence P.	'05	5 00	
Smith, Harley E.	'05	5 00	
Smith, Lauriston S.	'06	5 00	
Smith, Theodric	'05	5 00	
Smith, Willard A.	'06	5 00	
Smythe, William R.	'05	5 00	
Sniteman, Charles C.	'04-'05	10 00	
Snodgrass, Latta K.	'05-'06	10 00	
Amount carried forward		$5225 00	$98 75

	Annual Dues.	Certificates.
Amount brought forward.....	$5225 00	$98 75
Snow, Charles W.............'06	5 00	
Snow, Clyde M...............'05	5 00	
Sohrbeck, G. Henry ....'06	5 00	
Sohrbeck, George W.........'06	5 00	
Solomons, Isaiah A..........'06	5 00	
Sombart, John E............'05	5 00	
Southard, Frank A..........'05	5 00	
Spalding, Warren A..........'06	5 00	
Sparks, James M.............'05	5 00	
Speer, Charles C.........'05-'06	10 00	
Spiegel, Adolph..... ....'05-'06	10 00	5 00
Sprague, Wesson G..........'06	5 00	
Stacy, Marion F.............'06	5 00	
Staehle, Louis L.............'05	5 00	
Stahl, Amanda W........'05-'06	10 00	
Stamford, William H........'05	5 00	
Stange, Carl F....... ....'05	5 00	
Stearns, Frederick ....'06	5 00	
Stein, Edward T. N..........'06	5 00	
Stein, Jacob H...........'04-'05	10 00	
Steinmeyer, William O.......'06	5 00	
Stephenson, John J..........'05	5 00	
Stern, August O.............'05	5 00	
Stevens, Edward ....'05	5 00	
Stevens, Frederick S.........'06	5 00	
Stewart, Alexander ......'05-'06	10 00	
Stewart, Francis E.......'04-'05	10 00	
Stewart, Harry E........'04-'05	10 00	
Stierle, J. G.................'05	5 00	
Stimson, Charlotte E.........'05	5 00	
Stoddart, Thomas........'05-'06	10 00	
Stolz, Otto G.................'05	5 00	
Stone, Clarence G...........'06	5 00	
Stott, Samuel T..............'05	5 00	
Stoughton, Dwight G........'06	5 00	
Stowe, Ernest A.............'05	5 00	
Strickland, Franklin N.......'05	5 00	
Sturmer, Julius W.......'05-'06	10 00	
Stutzlen, Frank C...........'05	5 00	
Sultan, Frederick W.........'06	5 00	
Suppan, Leo R. A...........'06	5 00	
Swaringer, Dewitt C.....'05-'06	10 00	
Sweet, Caldwell ....'06	5 00	
Sweet, William H............'06	5 00	
Symonds, Arthur H..........'05	5 00	
Takamine, Jokichi...........'06	5 00	
Taylor, Augustus C..........'05	5 00	
Teeters, Wilbur J........'05-'06	10 00	
Temm, William D.......'03-'04	10 00	
Thames, Joseph J...........'05	5 00	
Thelander, Chreston C...'04-'05	10 00	
Thomas, Daniel J............'05	5 00	
Thomas, Robert, Jr..........'06	5 00	
Thomasson, Anders..........'06	5 00	
Thompson, Albert D.....'05-'06	10 00	
Thompson, Edwin T.'04-'05-'06	15 00	
Thompson, John R...........'05	5 00	
Thorburn, Albert D......'05-'06	10 00	
Thorn, Henry P.......... ..'06	5 00	
Thum, John K ....'05	5 00	
Thurston, Azor..............'05	5 00	
Thurston, Edwin J...........'06	5 00	
Timberlake, Arthur ....'05	5 00	
Timmer, Jacob B.............'05	5 00	
Timmons, George D.........'05	5 00	
Tobin, John M...............'05	5 00	
Todd, Albert M. ....'05-'06	10 00	
Toplis, William G..... .....'05	5 00	
Topping, Arthur E..........'05	5 00	
Torbert, Willard H..........'06	5 00	
Toulson, Milbourne A....'05-'06	10 00	
Traynor, Charles F..........'05	5 00	
Treat, Joseph A.............'06	5 00	
Truax, Charles....... .....'05	5 00	
Tucker, Greenleaf R.........'06	5 00	
Amount carried forward......	$5695 00	$103 75
Amount brought forward.....	$5695 00	$103 75
Tuthill, Frederick P.....'05-'06	10 00	
Uhlich, Ferdinand G.........'06	5 00	
Valentine, William G........'05	5 00	
Van Antwerp, James C.......'05	5 00	
Van Derveer, Robert H......'05	5 00	
Van Schaack, Cornelius P....'05	5 00	
Van Winkle, Abraham.......'05	5 00	
Vanderkleed, Charles E......'05	5 00	
Vargas, Jorge...............'06	5 00	
Vaughan, Parry W..........'05	5 00	
Villere, Rene L..............'05	5 00	
Voegeli, Thomas ....'05	5 00	
Voight, Joseph F............'06	5 00	
Von Stein, John H. ....'05	5 00	
Voss, Edward, Jr............'06	5 00	
Voss, George W........ ....'06	5 00	
Vowell, Louis S........ .'05-'06	10 00	
Waddell, Minor T...........'05	5 00	
Wade, Guy L...... ....'05	5 00	
Walbrach, Arthur........'04-'05	10 00	
Walbridge, Cyrus P........ .'06	5 00	
Walker, Alfred..............'05	5 00	
Walker, Charles H..........'05	5 00	
Walker, William A..... ....'05	5 00	
Wall, Otto A., Jr............'05	5 00	
Wallace, John C............'05	5 00	
Walton, Lucius L...........'05	5 00	
Wangler, Conrad D..........'05	5 00	
Ward, Charles A.............'03	5 00	
Ward, Charles E.........'05-'06	10 00	
Ward, Enoch J..............'05	5 00	
Ward, Homer B.........'04-'05	10 00	
Ware, Charles H ....'05	5 00	
Warn, William E............'06	5 00	
Washburn, Homer C.....'05-'06	10 00	
Watson, Herbert K..........'05	5 00	
Watson, Joseph R...........'05	5 00	
Watson, Sidney P....... ...'05	5 00	
Watson, William, Jr.........'06	5 00	
Watt, George H..........'05-06	10 00	
Webb, Edward N........'05-'06	10 00	
Webber, J. Le Roy..........'06	5 00	
Weed, Nelson ....'05-'06	10 00	5 00
Weicker, Theodore ....'06	5 00	
Weil, Albert J...............'05	5 00	
Weinstein, Abraham..... ...'05	5 00	
Weinstein, Joseph...........'05	5 00	
Weiser, William A...........'05	5 00	
Weiser, William P...........'06	5 00	
Weller, Frank P.............'05	5 00	
Wendt, William C....... ...'06	5 00	
Wenzell, William T.........'06	5 00	
West, Charles A......... ...'06	5 00	
West, Courtney H...........'05	5 00	
Westcott, James W......'04-'05	10 00	
Wetterstroem, Albert........'05	5 00	
Wetterstroem, Theodore D...'06	5 00	
Whipple, George H..........'06	5 00	
Whitney, David V...........'05	5 00	
Whitney, Edgar F..... .'04-'05	10 00	
Whitsitt, Lee M.............'05	5 00	
Whittet, James... ....'05	5 00	
Wickham, William H..... ..'06	5 00	
Wiegel, Carl G..............'06	5 00	
Wikle, Jesse L.... ....'05	5 00	
Wilbur, Lot......... ....'06	5 00	
Wilcox, Levi................'06	5 00	
Wiley, Harvey W...........'05	5 00	
Willard, Rowland ....'05-'06	10 00	
Willets, Charles E...........'06	5 00	
Williams, George C...'03-'04-'05	15 00	
Williams, Seward ....'05	5 00	
Williams, Walton G.........'05	5 00	
Williamson, Lee.........'04-'05	10 00	5 00
Willman, William G.....'05-'06	10 00	
Amount carried forward......	$6150 00	$113 75

	Annual Dues.	Certificates.
Amount brought forward	$6150 00	$113 75
Winter, James H ... '05	5 00	
Wirth, Adam ... '05	5 00	
Wirthman, J. George ... '05	5 00	
Wirthman, Joseph C. ... '05-'06	10 00	
Wisdom, Hugh ... '04	5 00	
Witting, Frederick F ... '05	5 00	
Wittmer, Joseph W., Jr. ... '06	5 00	
Wolcott, A. Lincoln ... '05	5 00	
Wolcott, Frank E ... '05	5 00	
Wolf. J. Carlton ... '05-'06	10 00	
Wolff, Edward H ... '06	5 00	
Wood, Alonzo F., Jr. ... '06	5 00	
Wood, James P. ... '06	5 00	
Woodland, Edward E. ... '05	5 00	
Woodman, Walter I ... '06	5 00	
Amount carried forward	$6235 00	$113 75
Amount brought forward	$6235 00	$113 75
Woodworth, Charles B. ... '05	5 00	
Wooten, Thomas V. ... '06	5 00	
Wrensch, Henry E., Jr. ... '06	5 00	
Wright, Charles L. ... '05	5 00	
Wuensch, Charles ... '05	5 00	
Wulling, Frederick J. ... '05-'06	10 00	
Wunderlich, Edward ... '05	5 00	
Young, Harry G ... '05	5 00	
Zabaldano, Alexander ... '05	5 00	
Zeamer, Henry W. ... '05	5 00	
Zelinski, Walter F., von ... '05	5 00	
Zimmerman, Albert ... '04-'05	10 00	
Zottman, William H. ... '06	5 00	
Zuenkler, Fred. J. ... '06	5 00	
Totals	$6315 00	$113 75

OBITUARY NOTICES.

Name.	Address.	Elected.	Died.	Born.	Preceptor.	College.
Aimar, Charles Pons	Charleston, S. C.	1879	March 8, 1905	February 2, 1826	G. W. Aimar	South Carolina.
Baridon, Louis R.	Montreal, Can.	1890				
Blank, Alois	St. Louis, Mo	1881	January, 1906	1848	Enno Sander	St. Louis.
Dobbins, Edward T.	Philadelphia, Pa	1867	February 17, 1906	May 29, 1841	Caleb Needles	Philadelphia.
Dutcher, Alfred L.	St. Albans, N. Y.	1892	October 5, 1905.			
Eichrodt, Chas. W.	Indianapolis, Ind.	1892	November 20, 1905	August 8, 1862	Arthur Peter	Louisville.
Hamrick, Charles B.	Meridian, Miss.	1905				
Hemm, Louis P.	Kirkwood, Mo	1894	February 23, 1906	May 18, 1861	Dr. Benno Bribach	St. Louis.
Koch, Louis	Philadelphia, Pa	1872	February, 1906	March 26, 1827	Wuth's Pharmacy	Philadelphia.
Lee, James A.	New Iberia, La	1856	January 8, 1904.			
Moith, Augustus T.	Fishkill, N. Y.	1860	October 8, 1903	1827.		
Ogier, John M.	Cambridge, O.	1895	October 11, 1905	April 1, 1843	Peter Ogier.	
Orne, Joel S.	Cambridge, Mass.	1859	May 27, 1906	August 12, 1823	Mr. Snow.	
Parsons, John	Chicago, Ill	1865		April 22, 1830.		
Pierce, Horace C.	Barton, Vt.	1904	February 21, 1906	October 14, 1850	E. F. Dutton	
Pilson, Abram C.	Baltimore, Md.	1898	April 13, 1906	January 29, 1849	P. M. Benson.	
Rittenhouse. Henry N.	Phildelphia, Pa	1857	June 24, 1905	December 31, 1831	Dr. Wynkoop	Philadelphia.
Ruppert, John.	Cincinnati, O.	1880	March 20, 1906	May 1, 1849	John F. Fratz	Cincinnati.
Schrader, August C.	Baltimore, Md.	1898	January 21, 1906	March 5, 1854	George Langenfeldt.	
Tigner, James O.	Greenville, Ga.	1890				

CONSTITUTION AND BY-LAWS

OF THE

AMERICAN PHARMACEUTICAL ASSOCIATION.

CONSTITUTION.

ARTICLE I. This Association shall be called the "American Pharmaceutical Association." Its aim shall be to unite the educated and reputable Pharmacists and Druggists of America in the following objects:

1. To improve and regulate the drug market by preventing the importation of inferior, adulterated, or deteriorated drugs, and by detecting and exposing home adulterations.

2. To encourage such proper relations among Druggists, Pharmacists, Physicians, and the people at large, as may promote the public welfare, and tend to mutual strength and advantage.

3. To improve the science and art of Pharmacy by diffusing scientific knowledge among Apothecaries and Druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business.

4. To regulate the system of apprenticeship and employment, so as to prevent, as far as practicable, the evils flowing from deficient training in the responsible duties of preparing, dispensing and selling medicines.

5. To suppress empiricism, and to restrict the dispensing and sale of medicines to regularly educated Druggists and Apothecaries.

6. To uphold standards of authority in the Education, Theory and Practice of Pharmacy.

7. To create and maintain a standard of professional honesty equal to the amount of our professional knowledge, with a view to the highest good and greatest protection to the public.

ARTICLE II. This Association shall consist of active, life, and honorary members, and shall hold its meetings annually.

ARTICLE III. The officers of the Association shall be a President, three Vice-Presidents, a General Secretary, a Treasurer, and a Reporter on the Progress of Pharmacy, all of whom shall be elected annually; also a Local Secretary to be elected by the Council. They shall hold office until an election of successors.

ARTICLE IV. All moneys received from life membership, together with such funds as may be bequeathed, or otherwise donated to the Association, shall be invested by the Treasurer in United States Government or State securities, the interest of which for any current year only may be used by the Association for its expenses.

ARTICLE V. Every proposition to alter or amend this Constitution shall be submitted in writing, and may be balloted for at the next Annual Meeting, when, upon receiving the votes of three-fourths of the members present, it shall become a part of this Constitution. Any proposition to amend the Constitution for the purpose of permitting the expenditure of the permanent invested funds of the Association, shall require a majority of seven-eighths for its passage.

BY-LAWS.

CHAPTER I.

Of the President and Vice-Presidents.

ARTICLE I. The President shall preside at all general sessions of the Association, except those of the special Sections, as hereinafter provided. In the event of his absence or inability to serve, one of the Vice-Presidents, or in the absence of all a President *pro tempore*, shall perform the duties of President.

ARTICLE II. In the absence of the General Secretary, the President shall appoint a Recording Secretary *pro tempore.*

ARTICLE III. At the sessions the President shall take the chair at the proper time; announce all business; receive all proper motions, resolutions, reports and communications, and order the vote upon all proper questions at the proper time.

ARTICLE IV. In all balloting, and on questions upon which the ayes and nays are taken, the President is required to vote, but his name shall be called last; in other cases he shall not vote, unless the members be equally divided, or unless his vote, if given to the minority, will make the decision equal; and in case of such equal division, the motion is lost.

ARTICLE V. He shall enforce order and decorum; it is his duty to hear all that is spoken in debate, and in case of personality and impropriety he shall promptly call the speaker to order. He shall decide all questions of order, subject to the right of appeal, unless in case where he prefers to submit the matter to the members; decide promptly who is to speak when two or more members rise at the same moment, and be careful to see that business is brought forward in proper order.

ARTICLE VI. He shall have the right to call a member to the chair, in order that he may take the floor in debate. He shall see that the Constitution and By-Laws are properly enforced.

ARTICLE VII. He shall appoint all committees, not provided for in the By-Laws or otherwise directed by the Association.

ARTICLE VIII. He shall sign the certificates of membership, and countersign all orders on the Treasury. He shall obey the instructions of the Association, and authenticate by his signature, when necessary, its proceedings.

ARTICLE IX. He shall present at each annual meeting an address, embodying general scientific facts and events of the year, or discuss such scientific questions as may to him seem suitable to the occasion.

CHAPTER II.

Of the General Secretary.

ARTICLE I. The General Secretary shall be elected annually and shall receive from the Treasurer an annual salary not to exceed $1000, and the amount of his expenses incident to the meeting, in addition to his salary.

ARTICLE II. He shall keep fair and correct minutes of the proceedings of the general sessions, and carefully preserve, on file, all reports, essays, and papers of every description presented to the Association, and shall be charged with the necessary foreign and scientific correspondence, and with editing, publishing, and distributing the Report of the Proceedings of the Association, under the direction of the Council.

ARTICLE III. He shall read all papers handed him by the President for that purpose, shall call and record the ayes and nays, whenever they are required to be called; shall notify the chairman of every standing and special committee of his appointment, giving him a list of his colleagues, and stating the business upon which the committee is to act. He shall notify every member at least two weeks in advance of the time and place of each annual meeting.

CHAPTER III.

Of the Local Secretary.

ARTICLE I. The Local Secretary shall reside at or near the place where the next annual meeting of the Association is to be held.

ARTICLE II. He shall assist the General Secretary in his duties; shall co-operate with the Council and any Local Committee in making arrangements for the annual meeting; shall correspond with the chairmen of the several committees, and with other members, in advance of the meeting, for the promotion of its objects, and shall have the custody of specimens, papers, and apparatus destined for use or exhibition at the meetings.

ARTICLE III. An exhibition of objects interesting to pharmacists, may be held each year, should the Council so determine, under the direction of the Local Secretary and the Committee on Commercial Interests.

CHAPTER IV.

Of the Treasurer.

ARTICLE I. The Treasurer shall collect and take charge of the funds of the Association, and shall hold, sign, and issue the certificates of membership.

ARTICLE II. He shall pay no money except on the order of the General Secretary, countersigned by the President, and accompanied by the proper vouchers.

ARTICLE III. He shall report to the Council, previous to each annual meeting, the names of such members as have failed to pay their annual dues for three years.

ARTICLE IV. He shall present a statement of his accounts at each annual meeting of the Council, that they may be audited; he shall receive an annual salary not to exceed $750, and the amount of his expenses incident to the meeting, in addition to his salary.

Article V. The Treasurer, in order that he may qualify for the office to which he has been elected, shall file a good and sufficient bond or bonds to the amount of $5,000 with the Chairman of the Council for the faithful performance of his duties as Treasurer, this bond or bonds to be signed and executed by two sureties or a Trust Company acceptable to the Council.

CHAPTER V.

Of the Reporter on the Progress of Pharmacy.

Article I. The Reporter on the Progress of Pharmacy shall be elected annually, and shall receive from the Treasurer for his services an annual salary not to exceed $750.

Article II. All journals and volumes received in exchange for the Proceedings by the General Secretary, and such other journals as shall be deemed necessary, shall be sent to him by that officer for use in the compilation of his report; for all of which he shall be held responsible until returned to the General Secretary for preservation.

Article III. From these and other available sources, he shall prepare a comprehensive report on the improvements and discoveries in Pharmacy, Chemistry and Materia Medica, and the collateral branches of knowledge; together with such statistical and biographical notices as will furnish an epitome of the progress and changes in the science and practice of Pharmacy, and of its votaries, at home and abroad.

Article IV. The Report on the Progress of Pharmacy shall commence with July 1st of the preceding year, and end with June 30th of the year in which it is submitted, shall be written in a form fitted for the printer, and shall be presented completed at the annual meeting, unless such meeting is held previous to August 1. An introduction or synopsis of the Report is to be presented to the Section on Scientific Papers.

Article V. In case of the illness or other inability of the Reporter to carry on the work of the report, the General Secretary and the Chairman of the Council shall be required to make the best arrangements they can command to continue the work to its completion.

CHAPTER VI.

Of the Council.

Article I. The business of the Association which is not of a scientific character shall be in charge of a Council, which is empowered to transact business for the Association between the times of meeting, to reduce any appropriations that have been made, whenever in their judgment the current receipts are not sufficient to allow the expenditure, and to perform such duties as may from time to time be committed to them by the Association; their acts, however, being subject to revision by the Association. Any member of the Association may attend the meetings of the Council, and may, by vote of the Council, be permitted to speak on any subject under discussion.

Article II. The Council shall consist of ex-officio members; one member from each local branch of this Association and nine other members, selected from such members as have had at least three years' membership in this Association, shall be elected by ballot by the Association in the following order: Three of them to serve for one year, three for two years, three for three years. At each subsequent annual meeting, three members shall be elected to take the places of those whose terms will then expire, to serve for the term of three years. None but *ex-officio* members of the Council shall be eligible for re-election thereto until one year after the expiration of their term of office.

ARTICLE III. The President, Vice-Presidents, General Secretary, Local Secretary, Treasurer, Reporter on the Progress of Pharmacy, the Chairmen of the Sections of the Association, and the Secretary of the Council, shall be *ex-officio* members of the Council.

ARTICLE IV. Vacancies which may occur in the Council shall be filled for the unexpired term or terms by the Association at its next annual meeting.

ARTICLE V. The officers of the Council shall consist of a Chairman, Vice-Chairman, and a Secretary, to be elected by ballot annually by the Council.

ARTICLE VI. The Council shall be charged with the examination of the credentials of delegates, and the transaction of unfinished business of the Association from one annual meeting to another, and with collecting, arranging, and expediting the business of the Association during the sessions of the annual meeting.

ARTICLE VII. There shall be elected annually by ballot, by the Council, three standing committees of the Council—a Committee on Membership, a Committee on Publication, and a Committee on Finance—to whom shall be referred such duties as are appropriate to their respective functions, as the Council shall direct; they shall report annually to the Council, and at such other times as the Council may direct.

ARTICLE VIII. *Section* 1. The Council shall have charge of the revision of the roll and the publication of the Proceedings.

Section 2. The Secretary of the Council shall read at each of its sessions the names of those candidates for membership which have been proposed, when a vote of two-thirds shall be sufficient to recommend them to the Association.

Section 3. The Council shall decide upon any objections which may be presented to them (which must be in writing, with the member's name attached), referring to the fitness of the candidates for membership; and no name shall be voted on by the Association without first receiving the approval of the Council.

Section 4. The Committee on Membership shall report at each annual meeting of the Council a revised roll of members, with appropriate notices of deceased members.

ARTICLE IX. The Council shall furnish to each member of the Association not in arrears, one copy of the annual Report of the Proceedings, which publication shall contain the correct roll of members, full minutes of the several sessions of the Association and of the Sections, a complete synopsis of the minutes of the Council, the reports of the President and Committees, together with such addresses, scientific papers, discussions, notices of new processes and preparations, as it may deem worthy of insertion. It shall also fix the price at which the Proceedings may be sold.

CHAPTER VII.

Of Membership.

ARTICLE I. Every pharmacist and druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, and those teachers of Pharmacy, Chemistry and Botany, who may be especially interested in Pharmacy and Materia Medica, also editors and publishers of pharmaceutical journals, who, after duly considering the objects of the Association and the obligations of the Constitution and By-laws, subscribe to them, are eligible to membership; provided that any person whose name has been dropped from the roll of membership for non-payment of dues shall be re-admitted only after having again made application in regular form—the application being accompanied by the usual fee.

ARTICLE II. Every application for membership shall require the endorsement of two members of the Association in good standing, and each applicant must receive the affirmative vote of three-fourths of the members of the Council for election, after which his membership shall be completed by his signing the Constitution and By Laws and paying the annual dues for the current year. Any applications for membership made during the time between July 1 of one year and July 1 of the following year shall be considered as of the current fiscal year.

Any newly-elected member, upon the payment of the annual dues for the year in which he is elected, shall be entitled to all the publications of the Association that are distributed to its members during the year. Persons elected later than March 1 shall not be *required* to pay the annual dues for that year, but if they do pay such dues, they shall receive all the publications to which members are entitled for the year.

ARTICLE III. Every member shall pay in advance to the Treasurer the sum of *Five Dollars* as his yearly contribution, and by neglecting to pay said contribution for *two successive years* he may be dropped from the Roll.

ARTICLE IV. Any member of the Association who shall pay to the Treasurer the sum of $100.00 during the first year of his connection therewith, and also any member not in arrears, who after ten years shall pay the sum of $75.00, or after fifteen years the sum of $50.00, or after twenty years the sum of $25.00, and any member who may have paid annual dues for thirty-seven consecutive years, shall become a life-member, and shall be exempt from all future annual contributions.

ARTICLE V. All local organizations of Pharmacists shall be entitled to *five* delegates, as their representatives in the annual meetings, who, *if present*, become members of the Association on signing the Constitution and paying the annual contribution for the current year: Provided, that the provisions of this article shall not be so construed as to reinstate any member whose name shall have been dropped from the roll for non-payment of dues; nor shall any one who has been expelled from the Association be received as a delegate. All credentials shall be sent to the General Secretary *at least two weeks* in advance of the annual meeting.

ARTICLE VI. Members shall be entitled, on the payment of *Five Dollars*, to receive from the Treasurer a certificate of membership signed by the President, one Vice-President, the General Secretary, and the Treasurer.

ARTICLE VII. Resignations of membership shall be made in writing to the General Secretary or Treasurer, but no resignation shall be accepted from any one who is in arrears to the Treasury.

All resignations shall be acknowledged in writing by the officer who receives them, and shall be reported to the Council.

ARTICLE VIII. Any member may be expelled for improper conduct, or the violation of the Constitution, By-Laws, or Ethics, adopted by the Association, but no person shall be expelled unless he shall receive for expulsion two-thirds of all the votes cast at a general session.

ARTICLE IX. Pharmacists, chemists, and other scientific men who may be thought worthy the distinction, may be elected honorary members. They shall not, however, be required to contribute to the funds, nor shall they be eligible to hold office or vote at the meetings.

CHAPTER VIII.

Of Meetings and Sections.

ARTICLE I. The meetings shall be held annually: Provided, that in case of failure of this, from any cause, the duty of calling the Association together shall devolve upon the President, or one of the Vice-Presidents, with the advice and consent of the Council.

ARTICLE II. To expedite and render more efficient the work of the Association, five Sections shall be formed, as follows: 1. Section on Scientific Papers; 2. Section on Commercial Interests; 3. Section on Practical Pharmacy and Dispensing; 4. Section on Pharmaceutical Legislation and Education; 5. Section on Historical Pharmacy.

ARTICLE III. The business of the Association shall be arranged so that the labors of each Section shall be considered only at the session or sessions to which they are especially assigned.

ARTICLE IV. The first, second and last sessions of the annual meeting shall be devoted to the general business of the Association, and sufficient time shall be assigned to the Association at the beginning of all other sessions to read the minutes of Council, act on the report of Council on membership, and receive propositions for amendments to the By-Laws.

ARTICLE V. At the third session the business of the Section on Commercial Interests shall be considered.

ARTICLE VI. At the fourth and fifth sessions the Section on Pharmaceutical Legislation and Education shall consider the business assigned to that Section.

ARTICLE VII. The sixth and seventh sessions shall be devoted to the reading of Scientific Papers and the discussions thereof.

ARTICLE VIII. The eighth and ninth sessions shall be devoted to the subject of Practical Pharmacy and Dispensing.

ARTICLE IX. The tenth session shall be devoted to the subject of Historical Pharmacy.

ARTICLE X. A Chairman and a Secretary shall be elected by ballot by each Section to serve at the sessions of said Section. The minutes of each session, together with all documents and papers which belong to each Section, must be placed as soon as possible in the hands of the General Secretary for publication and safe-keeping.

ARTICLE XI. The Chairman of each Section shall preside at each of its sessions, and shall prepare a short address treating upon the subjects connected with his Section, to be read before the Section at the annual meeting.

ARTICLE XII. There shall be elected by each Section a Committee, of which the Chairman of the Section shall be Chairman, to whom shall be delegated the duty of arranging in advance the business to come before the Section at the next annual meeting; these committees in each case becoming Standing Committees of the Association.

ARTICLE XIII. The order of business at the first session of each annual meeting shall be as follows:

Section 1. Promptly at the time named in the notice issued for the meeting, the President, or, in his absence, one of the Vice-Presidents, or, in their absence, a President *pro tempore*, shall officiate.

Section 2. In the absence of the General Secretary, the President shall appoint a Recording Secretary *pro tempore*, who shall perform the duties of the General Secretary until his arrival.

Section 3. Nineteen members shall constitute a quorum for the transaction of business.

Section 4. The President's address may then be read, after which the Council shall report the list of properly accredited delegates.

Section 5. Reports of Committees shall be presented, read by their titles, synopsis or in full, and laid on the table for future consideration.

Section 6. The President shall call the roll of States, the Territories, District of Columbia and the Provinces of Canada, requesting the members present from each State or Territory to appoint two members, the persons so selected to act as a Committee to nominate officers for the Association and members of the Council for the ensuing three years; in addition to which the President shall appoint five members from the Association at large to act with the Committee. Delegates who are not members must complete their membership before they are eligible to serve on the Nominating Committee.

Section 7. The minutes of the Council shall be read in full at the annual meeting of the Association, and its acts, if approved, shall be sustained by a vote of the majority of the members present; or, if disapproved by a majority of the members present, its acts shall be revised, so as to be acceptable to the Association.

Section 8. Incidental business.

ARTICLE XIV. The order of business at the second general session at each annual meeting shall be as follows:

Section 1. The President shall call the Association to order.

Section 2. The Secretary shall read the minutes of the preceding session, which may be amended, if necessary, and shall then be approved.

Section 3. The Report of the Committee on Nominations shall be read; when the President shall appoint tellers, and the persons nominated shall be balloted for.

Section 4. Reading of the Minutes of the Council.

Section 5. Reading of the Reports of the Treasurer and General Secretary.

Section 6. Reports of Standing Committees shall be read.

Section 7. Reports of Special Committees shall be read.

Section 8. Incidental business.

Section 9. Adjournment subject to the call of the President.

ARTICLE XV. The order of business for the sessions of the Sections shall be determined by each Section for itself.

ARTICLE XVI. No money shall be appropriated from the Treasury by any of the Sections.

ARTICLE XVII. At the last general session of the Association the newly-elected officers of the Association shall take their respective places.

ARTICLE XVIII. The Council may arrange for such social sessions, to be held after the adjournment of the last general session, as it may deem expedient, but no business of the Association can be transacted at these social sessions.

CHAPTER IX.

Of Committees.

ARTICLE I. There shall be appointed or elected ten Standing Committees as follows: a Committee on the U. S. Pharmacopœia and a Committee on Transportation, each to consist of ten members; a Committee on Time and Place of Meeting, a Committee on Commercial Interests and a Committee on Pharmaceutical Education and Legislation, each to consist of five members; a Committee on Scientific Papers, a Committee on Practical Pharmacy and Dispensing, a Committee on Historical Pharmacy, a Committee on Ebert Prize, and a Committee on General Prizes, each to consist of three members

ARTICLE II. The Committee on Commercial Interests shall be elected by the Section on Commercial Interests. It shall be charged with the work of arranging in advance the business to come before the Section at the next annual meeting. It shall propose each year a subject for discussion at the meetings of the State Associations, and at the following annual meeting of this Association shall present a report of the action of the State Associations upon the subject proposed.

ARTICLE III. The Committee on Scientific Papers shall be elected by the Section on Scientific Papers. It shall arrange the business of the Section, and shall report a number of questions of scientific and practical interest, the answers to which may advance the interests of Pharmacy, and shall procure the acceptance of as many such questions for investigation as may be practicable.

ARTICLE IV. Any person desiring to submit a paper to the Association shall present to the Chairman of the particular Section to which it refers, at least ten days prior to the meeting, an abstract of said paper, indicative of its contents, and consisting of not less than fifty nor more than two hundred words.

This abstract shall be printed as a part of the programme. The paper itself must be submitted to the officers of the Section previous to the first session. Not more than ten minutes shall be allowed for the presentation of any paper, unless by unanimous consent of the Section.

ARTICLE V. The Committee on the Ebert Prize, which shall be appointed by the Chairman of the Section on Scientific Papers, shall, at the next annual meeting after the one at which essays are presented, determine which, if any of them, has met the requirements of the founder of the prize. In all respects it shall be governed by the stipulations expressed by the donor.

ARTICLE VI. The Committee on General Prizes, which shall be appointed by the President, shall, at the next annual meeting after the one at which the papers are presented, determine which, if any of them, are worthy of prizes, and decide upon the relative merits of such papers as are deemed worthy.

ARTICLE VII. The Committee on Practical Pharmacy and Dispensing, composed of members actually engaged in the retail drug business, shall be elected by the Section on Practical Pharmacy and Dispensing. It shall arrange in advance the business to come before the Section at the next annual meeting. It shall propose a series of subjects for general discussion, and solicit papers on subjects pertaining to the actual practice of pharmacy in retail stores.

ARTICLE VIII. The Committee on Pharmaceutical Legislation and Education, which shall be elected by the Section on Pharmaceutical Legislation and Education, shall keep a record of, and compile for reference, the enactments of the different States regulating the practice of pharmacy and the sale of medicines. It shall report at each stated meeting of the Association what legislation on pharmaceutical subjects has occurred during the year. It shall arrange the business of the Section in advance of its sessions, propose suitable subjects for discussion, and shall attend to such duties as may be delegated to it by the Section. It shall propose each year a subject for discussion at the meetings of the State Associations, and, at the following annual meeting of this Association, shall present a report of the action of the State Associations upon the subject proposed.

ARTICLE IX. The Committee on Historical Pharmacy shall be elected by the Section on Historical Pharmacy. It shall arrange the business of the Section and shall present annually matters of special historical interest in pharmacy. It shall also secure the collection of letters, papers, etc., written by members of the Association, which when so collected shall remain in the custody of the committee and be available for reference to any one interested.

ARTICLE X. The Committee on the United States Pharmacopœia shall be appointed by the President of the Association, as follows: One member to be appointed for ten years and one for nine, eight, seven, six, five, four, three, two and one years respectively, each vacancy occurring by expiration of term to be filled by a new appointment for ten years. The Committee shall elect its own Chairman annually. It shall collect statistics regarding the frequency with which official and non-official remedies are used in legitimate practice, and shall endeavor to ascertain the general wishes and requirements of the profession throughout the country in regard to any desired changes or improvements in the Pharmacopœia. It shall also note errors of any kind found in the U. S. Pharmacopœia, so as to facilitate and aid the work of the National Committee on Revision of the U. S. P.

ARTICLE XI. The Committee on Transportation, which shall be elected by the Council, shall consist of one member each from the cities of Boston, New York, Chicago, St. Louis, Cincinnati, New Orleans, Atlanta, St. Paul or Minneapolis, Denver and San Francisco, and in conjunction with the General Secretary and the Local Secretary, who shall be members of the Committee, shall arrange for transportation from the different sections of the United States and Canada to the place of meeting and return. The Council shall annually elect the Chairman of this Committee.

CHAPTER X.

Rules of Order and Debate.

ARTICLE I. The ordinary rules of parliamentary bodies shall be enforced by the presiding officer, from whose decision, however, appeals may be taken, if required by two members, and the meeting shall thereupon decide without debate.

ARTICLE II. When a question is regularly before the assembly and under discussion, no motion shall be received but to adjourn, to lay on the table, for the previous question, to postpone to a certain day, to commit or amend, to postpone indefinitely; which several motions have precedence in the order named. A motion to adjourn shall be decided without debate.

ARTICLE III. No member may speak twice on the same subject, except by permission, until every member wishing to speak has spoken.

ARTICLE IV. On the call of any two members, the yeas and nays shall be ordered, when every member shall vote, unless excused by a majority of those present, and the names and manner of voting shall be entered on the minutes.

Article V. On all points of order not covered in these By-Laws, the Association shall be governed by the established usages in all assemblies governed by parliamentary rules.

CHAPTER XI.

Local Branches.

Article I. Local branches of this Association may be formed wherever it may appear that twenty-five members of this Association, in good standing, will participate, provided that no more than one such branch shall be formed in any one State, province, district or territory, unless the additional branches shall be formed at a point distant one hundred miles or more from any branch already established in the same State, province, district or territory.

Article II. All active or voting members of local branches must be members of this Association in good standing.

Article III. The objects and aims of local branches of this Association shall be the same as set forth in Article I of the Constitution of this body, and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it. And no local branch shall enact any article of Constitution or By-Law in conflict with the Constitution or By-Laws of this Association.

Article IV. Each local branch having twenty-five active or voting members shall be entitled to elect one member every three years, who shall become and continue a member of the Council of this Association for that time.

CHAPTER XII.

Miscellaneous.

Article I. Every proposition to alter or amend these By-Laws shall be submitted in writing at a general session, and may be balloted for at any subsequent general session, when, upon receiving the votes of three-fourths of the members present, it shall become a part of the By-Laws.

BY-LAWS OF THE COUNCIL.

CHAPTER I.

ARTICLE I. The officers of the Council shall consist of a Chairman, a Vice-Chairman and a Secretary, who shall be elected by ballot by the Council, to serve one year.

ARTICLE II. They shall be elected and shall assume the duties of their respective offices after the election of the new members of the Council by the Association.

CHAPTER II.

Of the Chairman and Vice-Chairman.

ARTICLE I. The Chairman shall preside at all meetings of the Council; in his absence or on account of inability from any cause, the Vice-Chairman, or, in the absence of both, a Chairman *pro tempore*, shall perform the duties of Chairman.

ARTICLE II. The Chairman of the Council shall confer with the Chairmen of the various special and standing committees of the Association, during its sessions, in order to arrange and expedite the business of the Association.

CHAPTER III.

Of the Secretary.

ARTICLE I. The Secretary shall keep fair and correct minutes of the proceedings of the meetings, and carefully preserve all reports and papers of every description received by the Council. He shall receive an annual salary not to exceed $300.

ARTICLE II. He shall read all the papers handed him by the Chairman for that purpose; shall call and record the yeas and nays whenever they are required to be called; he shall notify the Chairman of every special committee of his appointment, giving him a list of his colleagues, and stating the business upon which the committee is to act, and shall notify every member of the time and place of each meeting of the Council.

ARTICLE III. The Secretary of the Council shall also officiate as Secretary of the Committee on Membership.

CHAPTER IV.

Of Committee on Membership.

ARTICLE I. The Committee on Membership shall consist of seven members of the Council, to be elected annually by ballot. The General Secretary and the Treasurer of the Association shall be *ex-officio* members of this committee. The committee shall elect its chairman immediately after the election of its members by the Council.

Article II. The Committee on Membership shall be charged with the duty of keeping a correct list of the members of the Association, and shall present to the Council the list of applicants for membership who have complied with the requirements of the By-Laws of the Association.

Article III. It shall furnish appropriate biographical sketches of deceased members for publication in the Report of the Proceedings.

CHAPTER V.

Of Committee on Publication.

Article I. The Committee on Publication shall consist of five members, to be elected by ballot by the Council. Immediately after its election by the Council, the Committee shall elect a Chairman.

Article II. The Committee on Publication shall have charge of the publication and distribution of the Report of the Proceedings.

CHAPTER VI.

Of Committee on Finance.

Article I. The Committee on Finance shall consist of three members, who shall audit all bills of the Association, and orders on the Treasurer for the payment of bills shall not be issued without the consent of the Finance Committee.

CHAPTER VII.

Of the Centennial Fund.

Article I. A Committee on the Centennial Fund shall be formed, consisting of the President or one of the Vice-Presidents of the Association, of the Chairman of the Committee on Finance, and of the General Secretary. It shall receive applications in writing from members for grants from the interest derived from the Centennial Fund, the applications to be accompanied by a statement of the investigation to be made, and of the amount and cost of material required—it being understood that the results of the investigation, together with a full report thereon, be laid before the annual meeting of the Association.

Article II. The Committee shall consider these applications, and at as early a date as possible shall report to the Council an outline of the proposed investigations, together with such recommendations of grants from the available funds as it may deem proper.

Article III. The Council shall decide upon these recommendations, and in case the grants be approved, the Chairman of the Council shall direct orders to be drawn upon the Treasurer in favor of those members to whom grants have been made.

CHAPTER VIII.

Of Sessions.

ARTICLE I. The Council shall meet previous to the assembling of the Association, and at such other times as it may determine, or at the call of the Chairman.

ARTICLE II. On the written application of three members to the Chairman of the Council, a special session shall be called.

ARTICLE III. Nine members of the Council shall constitute a quorum.

ARTICLE IV. The order of business at the first session of the Council shall be as follows:

1. Organization by the election of the Chairman, Vice-Chairman, and the Secretary.
2. Election of the Standing Committees of Council, as follows:
   a. Committee on Membership, consisting of seven members of the Council, the General Secretary and the Treasurer.
   b. Committee on Finance, three members.
   c. Committee on Publication, five members.
   d. Committee on Centennial Fund, three members.
3. Unfinished and deferred business from the last Council, or such business as is especially referred to the Council from the Association.
4. The reading of the names of new members as provided in the By-Laws.
5. Reading of reports and appointment of committees.
6. New business.
7. Adjournment—and before the final adjournment, the minutes of the last session of the Council shall be read and approved.

CHAPTER IX.

Miscellaneous.

ARTICLE I. Three members of any of the Standing Committees shall constitute a quorum for the transaction of business.

ARTICLE II. In all questions arising before the Council or its Committees, and which can be disposed of by a positive or negative vote, the Chairman of the Council, or the Chairman of the Committee, may take the vote of their respective bodies in writing, and the same shall have the same force and effect as if the members had been personally present, a majority of the votes cast being considered sufficient to decide a question. The ayes and nays of such votes taken by the Council shall be entered upon the minutes.

ARTICLE III. Every proposition to alter or amend these By-Laws shall be submitted in writing, and may be balloted for at the next session of the Council, when upon receiving the vote of three-fourths of the members present, it shall become a part of these By-Laws.

GENERAL RULES OF FINANCE.

ADOPTED 1883, AMENDED 1885, 1887, 1888, 1895, 1900, 1901, 1903.

First, The Treasurer shall deposit all moneys received by him, except those belonging to the various "Funds," with some reliable banking company, where said money may be drawing interest for the benefit of the Association, said banking company to be designated by the Finance Committee, and approved by the Council.

Second, Said money shall be deposited in the name of the American Pharmaceutical Association, and all checks shall be drawn by the Treasurer, and shall be countersigned by the Chairman of the Council.

Third, All bills due by the Association shall be paid by numbered checks on said banking company, the checks, when returned to the Treasurer, to be attached to the several vouchers.

Fourth, The Treasurer shall make a deposit in the bank whenever the money in his hands shall amount to fifty dollars.

Fifth, The Chairman of the Council shall be the custodian of the bonds and saving-bank books, representing the several Funds belonging to the Association; and bonds and bank-books shall be in the name of the Treasurer, and the accounts of the same shall be kept by him; duplicate accounts to be kept by the Chairman of the Council, who shall make an annual report of the same to the Association.

Sixth, There shall be annually appointed by the Council an Auditing Committee, this Committee to consist of three members residing in or near the same city or town, the Chairman to be a member of the Finance Committee.

Seventh, The Treasurer shall balance his books July 1st of each year, and shall make out, previous to the fifteenth day of July following, his annual report for the financial year just closed.

Eighth, The Treasurer having thus balanced his books and made out his report, shall forward all his books, accounts, vouchers, etc., with the report, to the Chairman of the Auditing Committee, at such time and place in July of each year as said Chairman may direct.

The Chairman of the Council, in the presence of another member of the Association, shall make a list of the numbers and amounts of the bonds belonging to the Association, and both shall make affidavit to such list, which shall then be forwarded to the Auditing Committee for their use in auditing the books of the officers of the Association.

Ninth, Said books, accounts, vouchers, etc., shall be returned to the Treasurer, and said bonds, saving-bank books and accounts of the same to the Chairman of the Council, all within two weeks of the date of their reception by the Chairman of the Auditing Committee.

Tenth, There shall be a meeting of the Auditing Committee in July of each year, and it shall be the duty of said Committee, at such meeting, to carefully examine all the books, accounts, vouchers, funds, etc., etc., received by them; and previous to the 1st day of August following, to make a report thereon, in writing, to the Chairman of the Council.

Eleventh, The expense of the bond of the Treasurer, given by a Trust Company, shall be paid for from the Treasury.

Twelfth, The Treasurer shall furnish with his annual report an alphabetical list of the names of the members from whom he has received money for dues and certificates during the financial year, for publication in the Proceedings.

Thirteenth, The Finance Committee shall each year, previous to June 1st, present to the Council for its consideration a list of appropriations to cover the various expenditures of the coming fiscal year, the total of such appropriations to be based on the probable amount to be received from the annual dues for the coming year. No payment shall be made in excess of said appropriation except by special vote of the Council. *Provided*, however, that the Treasurer shall be authorized to transfer from one account to another, such amount as may be needed at any time, the amount of any such transfer not to exceed the sum of fifty (50) dollars.

Fourteenth, All balances remaining from appropriations at the close of each fiscal year shall be turned back into the treasury, unless otherwise ordered by the Council.

ROLL OF MEMBERS.

HONORARY MEMBERS.

FOREIGN COUNTRIES.

ENGLAND.

Dr. John Attfield, F. R. S., *Watford*, 1871.
Michael Carteighe, F. I. C., *London*, 1882.
Joseph Ince, F. L. S., *London*, 1882.
E. M. Holmes, F. L. S., *London*, 1899.

GERMANY.

Dr. Edward Schaer, *Strassburg*, 1877.
Dr. Ernst Schmidt, Geh. Reg. Rath, *Marburg*, 1899.

INDIA.

David Hooper, F. I. C., F. C. S., *Calcutta*, 1899.

RUSSIA.

Johannes von Martenson, Staatsrath, *St. Petersburg*, 1882.

ACTIVE MEMBERS.

Members are requested to report any inaccuracies in these lists, and to notify the General Secretary and Treasurer of all changes of address.

(The names of Life Members in SMALL CAPITALS. Names of Life Members under the old Constitution in *italics*.)

UNITED STATES OF AMERICA.

ALABAMA.

Anniston.

Wikle, Jesse Lane 1898

Auburn.

Miller, Emerson Romeo 1895

Florence.

Darby, Marvin Henry.............. 1904

Gadsden.

Cross, E. H. 1905

Marion Junction.

Harrell, Preston Brooks, Jr.......... 1905

Mobile.

CANDIDUS, PHILIP CHARLES 1857
Eichold, Bernard Herbert 1905
Maguire, Edward Sylvester.......... 1897
Van Antwerp, James Callanan....... 1905

Montgomery.

Knabe, Gustavus Alexander......... 1876

Prattville.

Scott, Clarence Alexander 1905

Selma.

Perkins, John Seymour.... 1904

ARIZONA.

Phœnix.

Roziene, Robert Philip Mathias...... 1904

Prescott.

Brisley, Harry 1894

ARKANSAS.

Camden.

Morgan, Aylmer Lee................ 1890

El Dorado.

Appleton, William Riley 1901

Fort Smith.

Sparks, James Mitchell 1894

Hot Springs.

Beasley, Robert Sidney.............. 1906
Klein, Ernest Frederick 1894
Schachleiter, Francis George 1906

Little Rock.

Bond, John Barnitz 1883
Ginocchio, James Alexander......... 1906
Hegarty, Charles Kiely.............. 1906
Snodgrass, Latta Kavanaugh 1901

Pine Bluff.

Dewoody, William Lawrence....... 1887

Pocahontas.

Skinner, William Henry............. 1905

CALIFORNIA.

Angel Island.

Mason, Myron Robinson 1904

Arcata, Humboldt Co.

Bohmansson, Robert Hugo 1901

Auburn.

Stevens, Frederick Solon 1903

Livermore.

McKown, Joseph Oscar	1906

Long Beach.

Smith, Harley Earl	1903

Los Angeles.

Kirkland, Derwentwater	1889

Mare Island.

West, Fred	1906

Napa.

Levinson, Joseph	1895
Shoults, Robert Grafton	1901

Oakland.

Varney, Edward Francis	1892

Ontario.

Jesson, Jacob	1872

Sacramento.

Lichthardt, George Henry Philip	1902

San Francisco.

Bayly, Charles Alfred	1889
Beck, Julius Edward	1904
Boulton, Emison Allen	1902
Boyken, John William	1902
Boyson, John Henry	1905
Brock, Gustavus Hamilton	1905
Dawson, John Henry	1882
Donohue, Henry	1903
Drossel, August Adolph	1902
Drucker, August Elisha	1904
Esters von Krakau, James Henry William	1897
Grazer, Frederick Augustus	1904
Jones, Philip Mills	1903
Jorgenson, Edward B	1902
Miller, Charles	1897
Prior, Toney	1905
Schmidt, Valentine	1887
Schneider, Albert	1899
Searby, William Martin	1882
Sharp, Sol. Albert	1902
Stange, Carl Frederick	1897
STEELE, JAMES GURDEN	1859
WENZELL, WILLIAM THEODORE	1870
Winter. James Harry	1904
Zabaldano, Alexander	1902

Vallejo.

Fletcher, David Maass	1904
Klotz, Gus. Oscar	1905

COLORADO.

Central City.

Best, John	1886
Davies, Llewellyn Powell	1891

Colorado Springs.

Brown, John Cecil	1905
Depeyre, Louis Noel	1894
Ward, Augustus Jae	1893

Cripple Creek.

Beitenman, William Wallace	1888

Denver.

Anglum, John	1902
Clayton, Charles J	1905
Ford, Charles Mangan	1887
Hover, William Adgate	1895
Rupp, Harlan Estle	1904
Walbrach, Arthur	1881

Fort Collins.

Scott, Alexander W	1906

Las Animas.

Hammar, Alrik	1897
Phillips, Thomas Newkirk	1904

Leadville.

Kolsch, Julius	1902
Nordlander, Anders Gustavus Emilus	1905

Longmont.

Witting, Frederick Frank	1902

Pueblo.

Taylor, George Edward	1895

COLUMBIA, DISTRICT OF.

Anacostia.

Weiss, Conrad Henry	1900

Washington.

Alexander, Charles Ellis	1899
Blackmore, Henry Spencer	1896
Boyd, George Washington	1883
Bradbury, Wymond Henry	1895
Campbell, Charles Berger	1902
Criswell, Francis McClure	1892
Duckett, Walter G	1876
Easterday, Herbert Clifton	1893
Elliott, Charles Houston	1899
Flemer, Lewis	1895
Franzoni, Joseph Dunbar	1900
Gahn, Henry	1902

Gordon, Frederick Troup	1900
Gross, Charles Ernst	1900
Henkel, Alice	1902
Henry, Frank Clinton	1894
Herbst, William Parker	1895
Hilton, Samuel Louis	1890
Hoover, George William	1905
Howell, Percy Clifton	1906
Hunt, Reid	1904
Hurlebaus, George William	1895
Kalusowski, Henry E.	1904
Kebler, Lyman Frederic	1894
Loussararian, Armenag Hovhannes	1905
Luve, Frank A. A.	1902
Major, John Richards	1873
McKay, Malcolm	1905
Milligan, John Dean	1900
Motter, Murray Galt	1904
Neeley, Guy Minick	1900
Quigley, Richard Lucien	1902
Rabak, Frank	1905
Richardson, Willard Stowell	1900
Richtmann, William Oscar	1904
Schreiner, Oswald	1900
Schulz, Henry Louis	1905
SIMMS, GILES GREEN CRAYCROFT	1860
Stevens, Edward	1903
Stott, Samuel Thompson	1900
Taylor, Augustus Carrier	1900
True, Rodney Howard	1904
Weller, Franklin Pierce	1900
Wiley, Harvey Washington	1902

CONNECTICUT.

Bethel.

Garvin, Patrick Joseph	1905

Bridgeport.

Hamilton, William Clinton	1902
Hartigan, Joseph Dennis	1902
Jamieson, George Alexander	1903
Leverty, John Augustine	1900

Danbury.

Dickinson, Arthur Lyman	1900

Danielson.

Morin, Ludger Joseph	1905

Hartford.

Duggan, James	1894
Rapelye, Charles Andrew	1876
Seinsoth, John Jacob	1900
Stoughton, Dwight George	1890
Williams, John Kirby	1875

Meriden.

Mosher, William Wooster	1894

Middletown.

Hartman, Frank Clayton	1905
Pitt, John Richard	1872

New Haven.

Fleischner, Charles	1905
Gessner, Emil Adolph	1878
Hodgson, Joseph Arthur	1903
Hogan, John Joseph	1890
Mix, Willis Lee	1896
Spalding, Warren Alphonso	1876
Wood, Alonzo Felton, Jr.	1890
Wood, James Prior	1890

New London.

Daboll, Horace Hart	1903

Putnam.

Dresser, George Edward	1886

Stanford.

Finch, Charles Smith	1900

Waterbury.

Ebbs, John Buddington	1905
Newton, Clarke Henry William	1905
Wilcox, Levi	1903
Woodruff, Roderick Samuel	1876

West Hartford.

Cone, John Wright	1876

West Haven.

Roemer, Frederick	1905

DELAWARE.

Wilmington.

Watson, Herbert Kennedy	1888

FLORIDA.

De Land.

Fisher, George Washington	1893

Eureka.

Parramore, George Brinson	1904

Jacksonville.

Dixon, John Marion	1894

Jones, William Daniel	1903
Kirk, James Edgar	1903
Stewart, Harry Erson	1903

Jennings.

Lloyd, Strauss Leonidas	1906

Key West.

Paine, E. Fernandez	1906
Stier Carl	1902

Miami.

Abernethy, John Cocke	1904

Monticello.

Palmer, John Dabney	1902

Ocala.

Groves, Henry Conrad	1903

Palatka.

Ramsaur, David Wilfong	1902

Pensacola.

Pettersen, Ernst Wilhelm	1905

Sarasota.

Brown, John Oliver	1905

St. Augustine.

Smith, Lauriston Stephen	1892
Speer, Charles Claude	1902
Woodman, Walter Irving	1893

Tampa.

Berger, Ernest	1902
Hutchinson, Currie J.	1905
Itizarri, Miguel Pino	1903
Mosely, Lawrence Joseph	1903

GEORGIA.

Atlanta.

Elkin, William Simpson	1905
Hood, Reuben Columbus	1902
Kelley. Ruben Benjamin	1905
Lippy, George Henry	1906
Payne, George Frederick	1893
Fitts, William Burton	1903

Augusta.

Durban, Sebastian Charles	1883
LAND, ROBERT HENRY	1859
Land, Robert Henry, Jr.	1902
Printup, Daniel	1903

Bowdon.

Lovvorn, James Lewis	1897

Brunswick.

Smith, John Stovall	1903

Columbus.

Gann, Henry	1903

Dawson, Terrill Co.

Davidson, Edgar Cyrus	1902

Elberton.

Cleveland, Jule Mattox	1902

Fitzgerald.

Goodman, John Hawkins	1904

Greenville.

Culpepper, Thomas Jefferson	1903

La Fayette.

Osborn, Edward Morton	1904

Macon.

Brunner, Norman Isaac	1878
Cheatham, Thomas Alexander	1890
Hoge, John Sutherland	1903
Lamar, Henry James	1897
Morris, Max	1898

Rome.

Curry, David W.	1894

Savannah.

Rowlinski, Robert Antone	1892
Solomons, Isaiah Abram	1894
Spangler, Lewis Clayton	1902

Thomasville.

Montgomery, John Swift	1904
Thomas, Robert, Jr.	1888

HAWAIIAN ISLANDS.

Honolulu.

Pfluger, Henry Christian	1903
RUMSEY, SAMUEL LOUIS	1876

Molokai.

Gibson, Frank Leighton	1904

IDAHO.

Boise.

Hamner, James Faris	1906
St. John, Sidney Sylvester	1897

Emmett.

Smithson, David Elmer	1890

Pocatello.

Rice, Ivan Snyder	1906

ILLINOIS.

Aurora.

Staudt, Louis Carl	1890

Bloomington.

Garver, Christian	1905

Blue Island.

McPherson, George	1865

Cairo.

Metzger, Matthias Clyde	1902
Schuh, Paul Gustav	1894

Camp Point, Adams Co.

Bartells, George Case	1881

Carbondale.

Patten, Eustis	1900

Carlinville, Macoupin Co.

Loehr, Theodore Christian	1888
Steinmeyer, William Otto	1901

Chicago.

Adamick, Gustave Hattenhauer	1891
Ade, Daniel Andrew	1906
Ahlborn, Frank Henry	1906
Avery, Charles Hamilton	1905
Bachelle, Percy von	1905
Bachelle, Rudolph von	1906
Baguley, Clarence B.	1905
Barnes, Walter E.	1906
Bartlett, John E	1906
Bartlett, Nicholas Gray	1861
Bate, Henry John	1906
Baur, Jacob	1879
Becker, Irwin Atwood	1905
Behrens, Emil Christian Louis	1893
Benson, Andrew J	1906
BIROTH, HENRY	1865
Blahnik, Marie (Mrs.)	1905
Bodemann, Wilhelm	1906
Boehm, John J	1905
Brenner, George Frederick	1906
Bruder, Otto Emil	1905
Brunn, Harold Nicolai	1905
Byrud, John	1905
Chantler, Vincent H	1906
Christensen, Henry C.	1906
Clark, Albert Henry	1905
Clothier, Charles Roland	1905
Collins, John Stephen	1906
Cooban, Benjamin Slater	1902
Danden, Raymond August von	1906
Day, William Baker	1895
Dieden, Frank Xavier	1905
Donaberger, Samuel Bricker	1906
Elsner, Fred. Hamroad	1906
Engelhard, George Pierre	1903
Eysenbach, Henry Philip	1905
Finnenger, Paul Ernest	1906
Fischnar, John Ferdinand	1905
Fisk, Frank Elmer	1902
Forsyth, William Kitchin	1902
Fry, Herman	1902
Fry, Narcys George	1906
FULLER, OLIVER FRANKLIN	1869
Gale, Abram	1905
Gale, Edwin Oscar	1857
Gale, William Henry	1857
Gauthier, Charles Desiro	1906
Gordin, Henry Mann	1899
Gram, William Joachim Borchgrewink	1905
Grassly, Charles William	1884
Gray, Margaret McClintock (Mrs.)	1901
Gray, William	1892
Green, Carl Victor	1906
Haeger, Fred	1906
Haeseler, Frank Preston	1906
Hallberg, Carl Swante Nicanor	1879
Hanson, George Conrad	1905
Harrison, William Henry	1905
Hartwig, Otto Julius	1892
Hauber, Peter Paul	1906
Hellmuth, Joseph Anthony	1905
Hermanek, Joseph Charles	1904
Hiss, Andrew Emil	1906
Hoelzer, Bruno Alfred Christian	1905
Holm, Marinus Larsen	1905
Hovey, Will Cleveland	1905
Hull, Ralph Wilbur	1906
JAMIESON, THOMAS NEVIN	1903
Jehlik, Anton Josef	1906
Jensen, Gerhard H.	1906
Kahn, Julius H	1905
Kasper, Albert Franklin	1906
Keeling, Francis, Jr	1905
Klenze, William Theodore	1905
Kolar, Gustav Stanley	1905

Krizan, William	1906
Ladish, Erich Herman	1905
Lake, Claude C.	1905
Lambert, Richard Jay	1906
Lehman, Louis	1905
Letzler, Axel Emil	1906
Lewis, I. Giles	1905
Lord, Thomas	1882
Lorenz, John Stanley	1906
Machenheimer, Don Grover	1906
Manns, Albert George	1905
Mares, Frank Martin	1902
Martin, Frank W.	1906
Martin, John Fraley	1905
Matthison, Soren	1905
Matthews, Charles Edwards	1893
McClugage, John Jordan	1905
McClure, Ulysses Gilmore	1906
McConnell, Charles Henry	1899
McQuillen, Francis	1906
McVay, Ernest Avery	1906
Meixner, Fred. Morris Frankford	1906
Miner, Maurice Ashbel	1880
Mrazek, Leo Ludwig	1906
Murbach, John E.	1905
Niethammer, Otto F.	1905
Nitardy, Ferdinand	1905
Oglesby, George Daniel	1905
Oldberg, Oscar	1873
Ortenstein, Harry M.	1906
Patterson, Charles Waggener	1905
Patterson, Theodore Henry	1869
Pierce, Olive Blake	1906
Pond, Raymond Haines	1903
Porter, George Melville	1906
Potter, Maynard H.	1906
Puckner, William August	1888
Quales, Iver Lawson	1905
Rhode, Rudolph Ernst	1887
Riemenschneider, Julius Henry	1906
Rosenthal, Joseph	1906
Rounds, Marvin Bird Cleo	1905
Rowles, Walter David	1905
Rozanski, Boleslaus J.	1906
Runkel, Julia	1905
Salchert, Herman Anton	1906
Sass, Stephen Konrad	1905
Sawyer, Hilon Hill	1906
Schaper, Henry Frederick	1905
Scheips, Theodor Immanuel	1905
Scherer, Andrew	1884
Schmidt, Florian Charles	1882
Schmidt, Florian Joseph	1906
Schmidt, Frederick Michael	1887
Schneider, Carl Henry	1906
Schreiner, Louis I.	1905
Schweitzer, Joseph	1906
Scofield, J. Walker	1905
Shinnick, Joseph Richard	1906
Shurtleff, Wilford C.	1906
Smith, Ralph N.	1906
Snow, Clyde Mason	1903
Snow, Herbert Waldemar	1906
Stahl, Amanda Wilhelmina	1903
Stimson, Charlotte Elizabeth	1905
Stolz, Otto G.	1905
Storer, Charles Adelbert	1906
Stuchlik, John	1906
Truax, Charles	1882
Valentine, William George	1905
Van Schaack, Cornelius Peter	1905
Vause, H. Russell	1906
VOISS, ARCADIUS	1901
Walter, Charles Albert	1899
Weydell, K. Albus	1906
WHITFIELD, THOMAS	1865
Winberg, Washington William	1906
Wisdom, Hugh	1901
WOLTERSDORF, LOUIS	1865
Wooten, Thomas Victor	1893
Yeomans, Sidney C.	1906
Zamentowsky, David	1906
Zelinski, Walter, Franz von	1905
Zuber, A. E.	1906
Zurawski, Narcys J.	1906

East St. Louis.

Knoebel, Thomas	1892

Evanston.

Gsell, Earl Wilson	1905

Fairmount.

Tilton, Claude Enoch	1905

Freeport.

McNess, Frederick William	1906

Geneseo.

Stamm, Dante Milton	1896

Girard, Macoupin Co.

Deck, Lewis Cass	1901

Grayville.

Wheatcroft, John Christopher	1906

Greenup.

Conzet, Rufus Warren............. 1904

Joliet.

Fahrner, Alphonse Anthony.......... 1906

Liberty.

Mercer, William Elmer............ 1902

Moline.

Lindvall, Charles Gustaf 1897
Sohrbeck, George Henry 1888
Sohrbeck, George William 1897

Mount Vernon.

Bond, Jackson Newlon 1902
Morse, Edward Worth.............. 1896

Oak Park.

McCauley, Charles Edward.......... 1903
Spater, William Charles 1905

Pekin.

Ehrlicher, Henry Michael........... 1892

Peoria.

Benton, Wilber Merritt............. 1888
Lueder, Fritz...................... 1894

Pesotum.

Hoffman, George Frederick......... 1902

Princeton.

Case, George Edwin................ 1906

Quincy.

Heidbreder, Albert Henry 1905

River Forest.

Lord, Frederic William............. 1905

Springfield.

Dodds, Richard Newton 1902

Stronghurst, Henderson Co.

Harter, Isaac Foster 1893

Tuscola.

Stacy, Marion Franklin............ 1903

Watseka.

Arnold, Ethelyn Bell............... 1905

Wilmette.

Gathercoal, Edmund Norris 1905

INDIAN TERRITORY.

Bokchito.

McAleer, Francis Alonzo............ 1904

Checotah.

Kniseley, Herman Dee.............. 1905

Durant.

Schenk, Fannie Kennedy (Mrs.) 1906

Muskogee.

Cobb, Henry C..................... 1905
Cumberledge, Samuel Gibson........ 1904

Welch.

Kinnison, Virgil A................. 1904

INDIANA.

Albion, Noble Co.

Miller, Chas. Elliott............... 1899

Angola.

Ritter, Clyde...................... 1905
Sherrard, Charles Cornell 1893

Batesville.

Baas, George Adam................ 1906

Bluffton.

Stout, Marion Alphon.............. 1906

Columbus.

Otto, Theodor Gotthelf Eduard 1900
Stahlhuth, Ernst Henry William...... 1887

Corydon.

Riely, Louis Stoy 1904

East Chicago.

Veaco, Sidney Harold 1906

Evansville.

Van Ness, George Ide.............. 1904

Fort Wayne.

Emanuel, Julia Esther.............. 1906
Gress, William Otto................ 1901
Mertz, Edward Leander 1904
Woodworth, Benjamin Studley 1906
Woodworth, Charles Beecher........ 1900

Indianapolis.

Carter, Frank Henry............... 1891
Coons, William I.................. 1906
Eichrodt, Mary Elizabeth 1906
Eldred, Frank Randall 1905

Ferger, Edward 1906
Field, Claud 1890
Francis, J. Richard 1906
Frauer, Herman Emanuel 1881
Gertler, John Henry 1905
Huder, Henry J. 1894
Hurty, John Newell 1882
Kassulke, August 1905
Lilly, Eli 1906
Lilly, Josiah Kirby 1890
Lynn, Charles Jackson 1906
Mueller, J. George 1906
Schwartz, Maurice P. 1906
Scopp, Otto 1906
Stewart, Ernest Eugene 1906
Thorburn, Albert David 1902
Timberlake, Arthur 1902
Waddell, Minor T. 1899
Walker, William Arthur 1905
Wolcott, Frank Elmer 1902

Lafayette.

Green, Arthur Lawrence 1906
Schultz, John Jacob 1904
Sturmer, Julius William 1901

La Porte.

Meissner, Frederick William, Jr 1890

Logansport.

Hoffmann, George L. 1906
Hoffmann, George William 1904
Porter, William Hamlin 1906

New Albany.

Knoefel, Bruno 1896
Knoefel, Charles Deitrick 1894

New Carlyle.

Warner, Francis Delop 1904

Notre Dame.

Green, Robert Lee 1906

Rushville.

Wilson, Charles Frazee 1906

Sheridan.

Elliott, Cassius Eugene 1904

South Bend.

Bastian, Otto Carl 1903
Coonley, Charles 1902
Ehel, Leo 1883
Meyer, Martin Monroe 1897
Weiser, William Augustus 1904

Tell City.

Schreiber, Charles Christian Frederic August 1901

Terre Haute.

Bretsch, John Louis 1906
Buntin, William Campbell 1906

Troy.

Gaesser, Theobald Theodore 1901

Valparaiso.

Heineman, Albert F. 1905
Roe, Joseph Newton 1902
Timmons, George Demming 1905

Warren.

Hickerson, William Henry 1894

Winchester.

Sala, Albert Franklin 1905

IOWA.

Amana.

Koch, August Frank 1903
Schadt, Conrad 1903

Ames.

Sayers, Milton Cary 1906

Boone.

Ridgway, Lemuel Augustus 1882

Callender.

Larson, Martin 1906

Charles City.

Legel, John Gotthelf 1897

Cherokee.

Mikkelsen, Niels 1903

Clear Lake.

Etzel, John Leonhardt 1897

Davenport.

BALLARD, JOHN WINTHROP 1871

Des Moines.

Berner, Carl Albert 1903
Fifield, Winfield Clark 1904
Howard, Fletcher (Mrs.) 1905
Macy, Sherman Riley 1891
Sandholm, John Alfred 1904

Dubuque.

Torbert, Willard Horatio 1887
Witmer, Joseph Washington 1896

Fort Dodge.

OLESON, OLAF MARTIN 1877

Fort Madison.

Schafer, George Henry 1871

Harlan.

Pederson, George M. 1905

Homestead.

Miller, Frederick William 1902

Iowa City.

Boerner, Emil Louis 1877
Teeters, Wilber John 1902

Keokuk.

Kiedaisch, George Arthur 1904

Marshalltown.

Mayer, Peter 1906

Muscatine.

Halstead, Alice Louisa (Mrs.) 1892

Reinbeck.

Junger, William Frederick Franklin .. 1902

Sioux City.

Andreen, Carl 1902
Koelle, Otto Charles 1902
Moore, Silas Harwood 1880
Scherling, Gustav 1884
Thelander, Cheston Carlos 1902
Thompson, Edwin Thomas 1902
Thompson, Joseph 1902

Stuart.

Treat, Joseph Augustus 1885

Unionville.

Allen, Earl 1905

Waterloo.

Wangler, Conrad David 1876

Winfield, Henry Co.

Lindly, John Milton 1901

KANSAS.

Atchison.

Cochrane, William Winston 1904
Myers, Carvosso Oursler 1904
Noll, Mathias 1901

Council Grove.

Gregory, Charles Alfred 1904

Ellsworth.

Sherriff, Willlam Ebenezer 1904

Gypsum City, Saline Co.

Schmitter, Jonathan 1892

Iola.

Evans, William Jesse 1904

Kansas City.

Ackenhausen, William Andrew 1904

Lansing.

Shudrowitz, Frank Stanislas 1904

Lawrence.

Havenhill, L. D. 1900
LEIS, GEORGE 1869
Moore, John Thomas 1888
Sayre, Lucius Elmer 1883

Leavenworth.

Mehl, Henry William 1905

Onaga.

Kester, Joseph A. 1904

Ottawa.

Becker, Charles Lewis 1892

Overbrook.

Topping, Arthur Ellsworth 1904

Paola.

Oyster, John Houck 1904

Topeka.

Holliday, Francis Emlen 1900
Snow, Frederick Asbury 1904

Wichita.

Henrion, Walter S. 1904

Wilmore.

Sombart, John Edward 1881

Winfield.

Friedenburg, Maximilian Wilmer .. 1904

KENTUCKY.

Covington.

Pieck, Edward Ludwig 1887
Willenbrink, Charles Anthony 1904
Zwick, Karl George 1899

Cynthiana.

Berry, Robert Henry.............1903

Frankfort.

Gayle, John William.............1891

Lexington.

Hall, Alexander.............1904
Harting, Rudolph R.............1902

Louisville.

Bell, Emil Remigius.............1890
Curry, Gordon Laten.............1900
DIEHL, CONRAD LEWIS.............1863
Dilly, Oscar Charles.............1888
Dimmitt, Addison.............1895
JONES, SIMON NEWTON.............1870
McDonald, Harry Stewart.............1905
NEWMAN, GEORGE ABNER.............1866
Overton, Burr Martin.............1903
Peter, Minor Cary.............1894
Schlosser, Peter.............1902
Schoettlin, Albert John.............1882
Troxler, Constantine, Jr.............1896
Votteler, William.............1895

Newport.

Bange, Otto Franz.............1904
Greule, Albert Martin.............1903

Paris.

Clarke, Charles Jordon.............1904

Somerset.

Porter, Chilton Scott.............1882

LOUISIANA.

Baton Rouge.

Maguire, Thomas Joseph.............1905

Covington.

Claverie, Joseph Stanislaus.............1904

Donaldsonville.

Sarradet, Atal August.............1905

Jeanerette.

Quirk, Edmond Charles, Jr.............1904

Jennings.

Richard, Valleix Bernard.............1905

Monroe.

Allen, William Everett.............1905

New Iberia.

Boutte, Armand Virgil.............1904

New Orleans.

Adams, James Ogilvie.............1904
Asher Philip.............1905
Breslin, Michael Thomas.............1905
Brown, George Stewart.............1900
Capdau, Pierre August.............1902
Castillon, Louis Albert.............1904
Cresap, Philip Pointer.............1904
Davis, George Bowditch.............1904
Dicks, Frederick Augustus.............1905
Earhart, Frederick A.............1904
Finlay, Alexander Kirkwood.............1883
Gibson, Robert Henry.............1906
Godbold, Fabius Chapman.............1887
Guidry, Ambrose Joseph.............1903
Henne, Louis E.............1905
Jacobs, Charles Christian.............1901
Katz, Gustave.............1903
Killeen, William Patrick.............1904
Larsen, John Thomas.............1904
Legendre, Joseph Amilcar.............1891
Levy, William Michael.............1894
Lyons, Lucien Eugene.............1904
Magruder, Charles Galloway.............1904
Marion, Etienne James.............1903
Monsabert, Arthur Charles de.............1905
Napp, William George.............1906
Posey, Henry Gibbon.............1905
Quin, Frank Woodard.............1902
Richardson, Thomas William.............1904
Samson, Max.............1900
Sauvinet, Charles Daniel.............1902
Villere, Rene Louis.............1905
Walsdorf, Charles Albert.............1904
Walsdorf, Edward H.............1904
Weilbaecher, Frank Eugene.............1904
Wirth, Adam.............1904
Wunderlich, Edward.............1891

Plaquemine.

Hiriart, Sebastian.............1891

Point Conpee.

Hebert, Joseph Henry.............1905

Pollock.

Bonnette, James Valarus.............1902

Shreveport.

Bernstein, Michel.............1902

MAINE.

Auburn.

Burnham, Ralph Foster	1904
Jones, Oscar Winthrop	1902

Augusta.

Partridge, Frank Reuben	1895

Bangor.

Davis, Charles Howard	1903
HARLOWE, NOAH SPARHAWK	1859
Sweet, Caldwell	1881

Bath.

Anderson, Samuel	1876

Biddeford.

Boynton, Herschel	1875
Traynor, Charles Francis	1902

Brunswick.

Leavitt, Adoniram Judson	1905
Wilson, Frederick Henry	1906

Danforth

Porter, Martin Luther	1904

Kennebunk.

Meserve, Albert Wesley	1905

Lewiston.

Lowell, Edwark Mark	1896

Orono.

Jackman, Wilbur Fisk	1899

Portland.

Cook, Alfred Page	1902
Drew, Walter Israel	1896
Frye, George Carlton	1879
Hay, Edward Allston	1889
Morse, Frank Dana	1902
Perkins, Benjamin Abbott	1878
Rand, Daniel Moulton	1892
Schlotterbeck, Augustus George	1896

Saco.

Sawyer, Charles Henry	1896

York Village.

Sanford, John Foy	1902

MARYLAND.

Annapolis.

Henkel, Charles Bernard	1902

Baltimore.

Baily, G. Frank	1906
Barnett, Joel Jones	1899
Base, Daniel	1898
Brack, Charles Emil	1876
Brickman, Arthur Otto	1898
Burrough, Horace	1883
Burrough, Horace, Jr	1901
Campbell, William Lusk	1905
Caspari, Charles, Jr	1883
Corning, Albion James	1898
Culbreth. David Marvel Reynolds	1883
Davis, John Alexander	1894
Dickson, Frederick W	1906
Dohme, Alfred Robert Lewis	1891
DOHME, CHARLES EMILE	1863
DOHME, LOUIS	1859
Dunning, Henry Armitt Brown	1902
ELLIOTT, HENRY ALEXANDER	1859
EMICH, COLUMBUS VALENTINE	1863
Feick, Charles	1901
Fouch, William M	1906
Frames, John Fuller	1890
Gilpin, Henry Brooke	1889
HANCOCK, JOHN FRANCIS	1863
Hengst, John Edwin	1900
Heiusler, Philip Ignatius	1903
Hynson, Henry Parr	1890
Kelly, Evander Frank	1905
Kornmann, Henry	1899
Kosminsky, Leon Joe	1902
Lowry, William John, Jr	1906
Maisch, Henry	1898
Mansfield, Samuel	1898
Meyer, Adolph Carl	1905
Meyer, Charles Lewis	1901
Millard, David Rockwell	1899
Morgan, Charles	1899
Muth, George G	1906
Muth, George Louis	1894
Muth, John Clement	1898
Muth, John Sebastian	1898
Nance, Fuller	1905
Neal, Charles Chaplin	1906
Schimmel, Maurice Solon	1906
Schulze, Louis	1892
Schumann, Otto George	1902
Scott, Edgar Burroughs	1905
Sharp, Alpheus Phineas	1855
Simon, William	1885
Smith, Owen Crause	1906
Smith, Theodoric	1890

Stearns, Cletus Otto	1906
Thomas, John Benjamin	1906
Walz, Jacob Lee	1906
Ware, Charles Howard	1898
Westcott, James Walling	1890
Williamson, Robert Edward Lee	1898
WINKELMANN, JOHN HENRY	1864
Wolf, Charles Augustine	1906
Wolf, James Carlton	1905
Wolf, Michael Francis	1906

Brookeville.

Howard, Henry	1905

Chestertown.

Toulson, Milbourne Asbury	1905

Frederick.

Pearré, Albert Lindsay	1906

Hagerstown.

Aughinbaugh, David Culbertson	1898
Meredith, Harry Lionel	1900
WINTER, JONAS	1863

Hancock.

Hook, James Patrick	1905

Roland Park.

Bacon, Ephraim	1905

Snow Hill.

Powell, William Cottingham	1895

Taneytown.

McKinney, Robert Sentman	1898

MASSACHUSETTS.

Boston.

Baird, Julian William	1894
Baker, Walter Nelson	1906
BASSETT, CHARLES HARRISON	1867
Burnham, Alfred Augustus, Jr	1891
CANNING, HENRY	1865
Capper, William Ernest	1892
Carter, Frederick Louis	1905
Colton, James Byers	1865
Cramer, Max	1881
Doliber, Thomas	1859
DRURY, LINUS DANA	1871
Durkee, William Carley	1885
Finneran, James Francis	1906
Gammon, Irving Parker	1906
Godding, John Granville	1875
Horton, Charles Henry	1905
Jaynes, Charles Porter	1905
Jaynes, Charles William	1905
Jones, James Taber	1875
Lauricella, Felice	1896
Lewis, Ernest Grant	1892
McCombie, James Newman	1906
Patton, Ichabod Bartlett	1858
Pfaff, Franz	1899
Pierce, William Herbert	1879
Sawyer, William Frederick	1885
Scoville, Wilbur Lincoln	1891
Sharples, Stephen Paschell	1875
SHEPPARD, SAMUEL ARUS DARLINGTON	1865
Simonson, Louis	1904
Smith, Linville Holton	1892
Tucker, Greenleaf Robinson	1890
Vargas-Heredia, Jorge	1891
Wells, Edwin Herbert	1893
West, Charles Alfred	1892
Wheeler, William Dexter	1892
Williams, George Gorham	1888
WILSON, BENJAMIN OSGOOD	1859

Brockton.

Randall, Frank Otis	1893

Brookline.

Clapp, Lowell Tuckerman	1905
Gerald, Herbert Franklin	1906

Cambridge.

Claflin, Walter Addison	1896
Phillips, Carrie Elizabeth	1894
Seaverns, Martha Gilbert	1902

Cambridgeport.

La Pierre, Elie Henry	1892
Norton, George Edward	1895

Charlestown.

STACEY, BENJAMIN FRANKLIN	1860

Chelsea.

LaGrange, John V	1905

Concord.

Richardson, Horatio Stillman	1892

Dorchester Centre.

Tripp, Arthur Horton	1906

East Boston.

Packard, Charles Herbert	1906

East Weymouth.

Hoyt, George Melvin 1904

Fairhaven.

Snow, Levi Morton 1905

Fall River.

Riddell, Benjamin Franklin 1892

Fitchburg.

Coté, André Alexander 1904
Day, Edward John 1901
Estabrook, Henry Arthur 1886

Holyoke.

Ball, Charles Ely 1885
Heinritz, Lebrecht Gustav 1902

Hyde Park.

Reemie, Edgar Warren 1905

Jamaica Plain.

Ernst, Frank Frederick 1891

Lawrence.

Glover, William Henry 1891

Leominster.

Nixon, Charles Frederic 1900

Lowell.

BAILEY, FREDERICK 1869
Hood, Charles Ira 1871
Thomasson, Anders 1892
Willson, George Arnold 1906

Malden.

Keaney, James John 1899

Mattapan.

Best, Samuel M 1906

New Bedford.

BLAKE, JAMES EDWIN 1866
SHURTLEFF, ISRAEL HAMMOND 1875

Newburyport.

Castlehun, Karl 1902
Davis, Charles Leland 1897
Goodwin, William Wells 1853

Newton.

Crowdle, John Edward 1894
Hudson, Arthur 1882

Pittsfield.

Engstrom, Ernst Oscar 1906

Provincetown.

Adams, James Holmes 1906

Raynham.

Crossman, George Alvin 1872

Revere.

Larrabee, Charles William 1906

Salem.

Nichols, Thomas Boyden 1876
Price, Charles Henry 1882
Price, Joseph 1888

Shelburne Falls.

Baker, Edwin 1875

Southborough.

Newton, Robert Albro 1906

Springfield.

Adams, Henry 1904
Erck, Philip Frederick 1906

Stoneham.

Patch, Edgar Leonard 1872

Vineyard Haven.

Richardson, Samuel William 1897

Waltham.

Gleason, Patrick Sebastian 1904

Worcester.

Brewer, Howard Dickinson 1902
Cutler, Bertram Crocker 1905
Guerin, James Francis 1898
High, Raymond Lightcap 1902
Scott, George Theodore 1883

MICHIGAN.

Ann Arbor.

Blome, Walter Henry 1903
Calkins, Eleazer E. 1903
EBERBACH, OTTMAR 1869
Eckler, Charles Ralph 1903
Schlotterbeck, Julius Otto 1888
Stevens, Alviso Burdette 1885

Battle Creek.

Erwin, Sid. A 1904

Berrien Springs.

Kephart, Philip 1902

Cadillac.

Webber, Arthur H. 1903

Corunna.

Reidy, Michael 1894

Detroit.

Allen, William Humphries 1902
Burke, William Henry 1902
Francis, John Miller 1906
Hall, William Alanson 1888
Helfman, Joseph 1894
Houghton, Elijah Mark 1899
Iltis, George Washington 1905
Knox, James Wesley Thompson 1898
Lyons, Albert Byron 1885
MacFadden, Warren Lester 1902
Mann, Charles Frederick 1903
Mason, Harry Beckwith 1896
Nelson, Edwin Horatio 1904
Ohliger, Willard 1903
Perry, Frederick William Riley 1885
Roll, Tod B. 1906
Ryan, Frank Gibbs 1892
Seltzer, Leonard Adams 1899
Vernor, James 1866
Wheeler, A. Alton 1906

Flushing.

Sprague, Wesson Gage 1895

Grand Rapids.

Beukema, James Alfred 1903
Dutmers, Cornelius John 1905
Kirchgessner, William Carl 1903
Muir, John Davidson 1903
Peck, Percy Seaman 1903
Schmidt, Walter Karl 1903
Stowe, Ernest A. 1904
Timmer, Jacob Berend 1904

Ionia.

Gundrum, George 1882

Kalamazoo.

Todd, Albert May 1885

Monroe.

Hagans, Daniel Allen 1903

Mount Clemens.

Schanher, Paul 1905

Pontiac.

Cloonan, Martin John 1904

Saginaw.

Heim, Henry 1900
Prall, Delbert Elwyn 1902

MINNESOTA.

Avoca.

Bachman, Gustav 1905

Duluth.

Abbett, William Allen 1901
LeRicheux, Alfred Charles 1901
Sweeney, Robert Ormsby 1866

East Grand Forks.

Kingman, Ignatius 1904

Jackson.

Bailey, Leon 1904
Colby, Charles Ludwig 1904

Mankato.

Lamm, Edward Leo 1906
Weed, Nelson 1905

Minneapolis.

Allen, E. Floyd 1885
Danek, John Francis 1895
Gamble, Stewart 1897
Huhn, Charles Hugo 1905
King, George Alexander Newton 1892
O'Connell, Charles John 1903
Sweet, William Herbert 1905
Thompson, Albert Delano 1895
Voegeli, Thomas 1905
Wanous, Josephine Anna 1897
Wittich, Matthew Henry 1897
Wulling, Frederick John 1893

New Ulm.

Alwin, William Gustav 1904
Eckstein, Andrew Joseph 1895

Ortonville.

Nielson, John 1897

Pelican Rapids, Otter Tail Co.

Axness, Ole Mikkelson 1895

St. Paul.

Campbell, Albert Alexander 1902
Collier, William Kelly 1897
Frost, William Arthur 1892
Heller, Charles Tomkins 1906
Parker, Frederick M. 1902
Schumacher, Albert John 1904

Two Harbors.

Elfstrand, Wilhelm 1905

Winona.

Lauer, Joseph William..............1904
Leeb, Theodore Feargod 1903

MISSISSIPPI.

Aberdeen, Monroe Co.

Eckford, Joseph William...........1883

Biloxi.

Thurston, Edwin Joseph............1904

Columbus.

Caine, S. Lee.............. 1904

Durant.

Nicholson, Gilbert Walne. ... .1905

Ellisville.

Hyde, Milton Warren...............1905
Ward, Enoch James 1905

Hattiesburg.

Dozier, William Alney..............1905
Metcalfe, Alexander Hamilton 1905
Renfroe, Harris Burt. 1904

Holly Springs.

Barry, Augustus Franklin. 1904

Laurel.

Polk, Martin Luther.. 1904

McComb City.

Fly, Anthony 1905

Meridian.

Bethea, Oscar Walter..... 1902
Hammond, E. Emmet..............1905
Holt, Julian Woods........... 1905
Humphries, John Randolph. 1905

Osyka.

Coody, Archible Stinson............1906

Oxford.

Faser, Henry Minor. 1904

Port Gibson.

Shreve, John Alexander 1880

Richton.

Brill, Paul D.......................1905

Summit.

Covington, Samuel Maurice..........1906

Tchula.

Alexander, John Mills...............1905

Waynesboro.

Slaughter, Thomas Oslin............1904

Woodville.

Birdsong, Lafayette Felix. 1904

MISSOURI.

Boonville.

Mittelbach, William..................1891

Carrollton

PETTIT, HENRY MCEWEN 1860

Centralia.

Hope, Robert Lee 1901

Clayton, St. Louis Co.

Greensfelder, Harry 1904

Jefferson City.

Brandenberger, Adolph....... 1894

Kansas City.

Breunert, August 1901
Crampton, Ferd Leslie....... 1896
Davis, Harry Roy...................1904
Dicky, Charles Francis..............1904
Eyssell, George.....................1889
Federmann, William Martin. 1901
Griffiths, Joseph. 1901
Hess, Paul Ludwig 1892
Lee, Richard Henry................1904
Reymond, John Paul. 1903
Vincent, Frederic Arthur Charles. 1904
Whitney, David Victory 1903
Wirthman, John George............1903
Wirthman, Joseph Charles..........1903

Linn Creek.

Moulder, Bettie Leona 1905

Maitland.

Nie, Henry Joseph..................1905

Marysville.

Orear, Edwin George 1904

Mexico, Audrian Co.

LLEWELLYN, JOHN FREDERICK 1867

Nevada.

Ballagh, Wilfred Thomas	1901
Pierce, Fred	1903

New Madrid.

Hummel, John Andrew	1901

Plattsburg.

Carmack, George Ward	1903

Sedalia.

Bard, William Evans	1901
Dow, John P	1904
SMITH, OTIS WILMER	1903

Springfield.

Hinton, Rufus Guy	1905

St. Louis.

Blakeslee, Louis G.	1903
Boehm, Solomon	1871
Boesewetter, Richard	1902
Carter, Frederick James	1905
Caspari, Charles Edward	1902
Claus, Otto Ferdinand	1901
Collins, Albert Noel	1905
Duering, Henry Charles	1901
Eulur, Frederick Christopher	1901
Falk, John Charles	1900
Fischer, John Frederick Henry	1901
Fricke, Frederick Henry	1901
Gietner, Charles	1905
GOOD, JAMES MICHENER	1871
Grewe, Louis Frederick	1901
Hagee, William Price	1901
Hagenow, Theodore Frederick	1901
Hahn, Charles William John Henry	1901
Hemm, Francis	1881
Ilhardt, William Kellerman	1901
Ittner, William Frederick	1903
Judge, Charles Rogers	1901
Kleinschmidt, Augustus Anton	1903
Klie, George Henry Charles	1878
Koeneke, Charles Henry	1901
Kurtz, Irving William	1904
Lamar, William Robinson	1901
Leftwich, Harry Percy	1906
MALLINCKRODT, EDWARD	1869
May, Charles Charlotte	1898
Merrell, George Robert	1901
Merrell, Hubert Spencer	1903
Merrem, Charles Daniel	1901
Meyer, Theodore Frederick	1901
Noll, Martin James	1898
Pauley, Frank Charles	1879
Philibert, Leon David	1901
Queeny, John Francis	1905
Reilly, Robert Charles	1901
Riley, Cassius Marcellus	1901
Riley, Russell	1901
SANDER, ENNO	1858
SCHEFFER, HENRY WILLIAM	1863
Schlueter, Robert Ernst	1904
Schoenthaler, John Paul	1901
Seitz, Lorenz Aloysius	1901
Sennewald, Emil August	1900
Stolle, Henry Jasper	1903
Sultan, Frederick William	1901
Sum, Francis	1904
Suppan, Leo Richard August	1904
Temm, William Daniel	1901
Uhlich, Ferdinand Gottlieb	1881
VORDICK, AUGUST HENRY	1874
Walbridge, Cyrus Packard	1901
Wall, Otto Augustus	1884
Weber, Peter John	1901
WHELPLEY, HENRY MILTON	1887
Whitcomb, Frederick Ezekiel	1888
Wolff, Edward Henry	1901

Vandalia.

Morgan, Thomas, Jr	1905

Warrensburg.

Murray, Julius Victor	1905
Sorency, Robert	1903

Washington.

Gallenkamp, Edward William	1903

Webb City.

Wade, Guy Leland	1905
Wright, Charles Lewis	1901

Webster Groves, St. Louis Co.

Mueller, Ambrose	1894

Williamstown.

Felker, Walton Arthur	1904

Windsor, Henry Co.

Wesner, Henry Clay	1901

MONTANA.

Butte.

Rockefeller, Howard	1900

Great Falls.

- Wicks, Jesse Harrison 1903

Havre.

- Boon, Peyton Terry 1904
- Burruss, Morris 1904

Livingston.

- Scheuber, Frank Augustus 1905

NEBRASKA.

Auburn.

- Dort, Edward Harvey 1903

Beaver City.

- Hopping, Charles Edward 1903

Fairbury.

- Pease, Autumn Vine 1893

Greeley.

- Clough, Frank Harrington 1905

Holdredge.

- Fink, Daniel Jacob 1903

Kearney.

- Hansen, Neils P. 1906

McCook.

- McConnell, Lewis William 1904

Norfolk.

- Christoph, George Benjamin 1905

Omaha.

- Mares, Ferdinand Louis 1897
- Myers, Preston B. 1897
- Searson, Edwin Aaron 1904
- Sherman, Charles Rollin 1889

Plattsmouth.

- Fricke, Frederick George 1903

St. Paul.

- Wilson, Elmer Lee 1903

Superior.

- Kendall, Wallace Warren 1903

NEW HAMPSHIRE.

Berlin.

- Lyford, Earle Howard 1903

Dover.

- *Rollins, John Francis* 1859

Littleton.

- Robins, Wilbur Fiske 1892

Portsmouth.

- Grace, William Day 1896
- Green, Benjamin 1888

Somersworth.

- Hurd, John Charles 1892

West Derry.

- Bell, Samuel Howard 1890

NEW JERSEY.

Atlantic City.

- Deakyne, Harry Hartup 1905
- Ridgway, William Frederick 1902
- Wescott, William Carter 1896

Bernardsville.

- Squibb, Charles Fellows 1901

Bridgeton.

- Dare, Charles Ford 1889
- Jorden, Henry Albert 1902
- Whipple, George Henry 1902

Camden.

- Barrett, Charles Llewellyn 1902
- Beringer, George Mahlon 1893
- Beringer, George Mahlon, Jr 1905
- Weiser, William Peiffer 1902

Collingswood.

- Chamberlin, William Allan 1906
- Vanderkleed, Charles Edwin 1902

East Orange.

- Williams, Seward Whiting 1887

Elizabeth.

- FROHWEIN, RICHARD 1867
- Kent, Henry Avery, Jr. 1880
- Oliver, William Murray 1875
- Schmidt, Henry 1904
- Stutzlen, Frank Charles 1902

Freehold.

- Lehritter, George Peter 1902

Haddonfield.

- Willard, Rowland 1902

Hoboken.

- KLUSSMANN, HERMANN 1876
- Sieker, Ferdinand August 1893

Jersey City.

Abernethy, Maxwell 1865
Foulke, James 1881
Gallagher, John Charles 1893
Lohmann, Herman J 1896
Stein, Edward Theodore North 1902

Jersey City Heights.

Bongartz, Ferdinand Alphonse 1905
Kuehne, Charles 1902

Kearney.

Shaak, Franklin Philip 1906

Keyport.

Warn, William Edgar 1886

Lakewood, Ocean Co.

Harrison, William John 1896

Linden.

Dougherty, Samuel Edward 1875

Matawan, Monmouth Co.

Slater, Frank Hovey 1882

Medford.

Thorn, Henry Prickett 1879

Milburn.

Campbell, George Stelle 1905

Montclair.

Wrensch, Henry Ernest, Jr 1902

Morristown.

Betzler, Jacob 1880
CARRELL, EUGENE AYRES 1875

Newark.

Bear, Pierce B 1905
Coleman, John H 1902
Drescher, August 1905
Eckert, John 1902
Foster, John Benjamin 1901
Hain, Frank William August 1905
HOLZHAUER, CHARLES 1873
Menk, Charles William 1898
Smith, Clarence Pennington 1890
Staehle, Louis Lorenz 1898
Stamford, William Harrison 1876
Wuensch, Charles 1898

New Brunswick.

KILMER, FREDERICK BARNETT 1886
Rust, Schuyler Scott 1905

Orange.

Sayre, Edward Augustus 1877

Paterson.

Collins, Mary Elizabeth 1902
Mackey, James Campbell 1905

Perth Amboy.

Parisen, George Warren 1892
Seaman, Frederick A 1905

Phillipsburg.

Anewalt, Ellsworth Quincy 1901

Plainfield.

Ollif, James Henry 1867
Schreiner, Robert 1906

Red Bank.

Van Derveer, Robert Hutchinson 1903

Shrewsbury.

Hazard, Elmer Clarke 1902

South Amboy.

JACQUES, GEORGE WASHINGTON 1869

South Orange.

Feindt, Louis F 1906

Trenton.

Cook, Elliott Daniel 1906

Union Hill.

Neu, Daniel Alfred 1903

Verona, Essex Co.

Rich, William Pitt 1902

Vineland.

Newcomb, Edwin Leigh 1906

NEW MEXICO.

Santa Fe.

Fischer, Adolph Jacob 1904

NEW YORK.

Albany.

Bradley, Theodore James 1896
Bradt, Warren Lansing 1903
Dillenback, Garett Van der Veer 1902
Gaus, Charles Henry 1879
Huested, Alfred Birch 1879
Michaelis, Gustavus 1882
Taylor, Henry Lewis 1906

Auburn.

Adams, Arthur Ellison 1902
Sears, Charles Barager 1906

Binghamton.

Nelson, Burt Everett 1902

Brooklyn.

Anderson, William Christine 1900
Bartley, Elias Hudson 1893
Brooks, George Washington 1879
DeForest, William Pendleton 1879
DeJonge, Cornelius 1899
Dewender, William Henry 1896
Dissosway, Thurston N. 1905
Douglas, Henry 1875
DUNN, JOHN AUGUSTUS 1867
Eccles, Robert Gibson 1885
Englander, Samuel 1899
Fischer, Albert 1904
FOUGERA, EDMUND CHARLES HENRY. 1890
Hereth, Franklin Samuel 1893
Kleine, Oscar Clemens, Jr. 1903
Lo Sardo, Antonino 1902
May, Louis 1902
Mayer, Joseph L. 1905
McElhenie, Thomas DeArmond 1872
McMahon, Joseph 1897
Myerson, Isaac Aaron 1906
OWENS, RICHARD JOHN 1860
Raubenheimer, Otto 1902
Rosenzweig, Benjamin 1898
Schaak, Milton Franklin 1906
Schaffer, Charles 1903
Snyder Ambrose Chancellor 1867
Tuthill, Frederic Percival 1899
Waldner, Paul Jacob 1900
Webber, Joseph LeRoy 1886
Werner, Rudolph Carl 1882
Wyckoff, Elmer E. 1906

Buffalo.

Bentz, Henry George 1904
Dimond, Harry John 1904
Gregory, Willis George 1886
Hayes, Horace Philips 1880
Rano, Charles Orlando 1866
Reimann, George 1902
Stoddart, Thomas 1900

Cambridge.

Richardson, Frank 1906

Catskill.

Du Bois, William Laneman 1880

College Point.

Hartz, Johann Daniel August 1902
Klein, Edward Nichols Emil 1905

Corning.

Cole, Victor Le Roy 1890

Croton-on-Hudson.

Henry, Charles (Dworniczak) 1881

Dannemora.

Sloss, Robert Audley 1901

Dunkirk.

Davis, Eugene Miller 1892

Ellis Island.

Macdowell, William Foster 1904
Neves, George 1904

Elmira.

HOLMES, CLAYTON WOOD 1873

Flushing.

Hepburn, John 1873

Geneseo, Livingston Co.

Rogers, Arthur Henry 1882

Jamaica, Queens Co.

Goodale, Harvey Galusha 1879
Peck, George Lyman 1883

Middletown.

KING, JAMES THEODORE 1859
ROGERS, WILLIAM HENRY 1869
Shimer, Samuel Mortimer 1904

Monticello.

Isakovics, Alois von 1905

Mount Vernon.

Rauschenberg, Sidney 1900
Stone, Clarence George 1901

New York City.

Allison, William Outis 1895
Alpers, William Charles 1890
Amend, Bernard Gottwald 1892
Balser, Gustavus 1875
Bigelow, Clarence Otis 1900
BILLINGS, HENRY MERRY 1869
Boeddiker, Otto 1895

Brucker, Carl Friederich Jacob	1902
Brunor, Emile	1904
CHANDLER, CHARLES FREDERIC	1867
Coblentz, Virgil	1882
Cohn, Alfred I.	1905
Cook, Thomas Penrose	1877
Cowan, John	1897
Daggett, Volney Chapin	1901
Diamond, Peter	1905
Diekman, George Charles	1898
Diner, Jacob	1906
Duble, Jesse Balderston	1904
Elliot, Boyce	1906
Ennis, Ephraim Leonard	1906
Evans, William James	1904
Faber, Walter Eberhard	1900
Fairchild, Benjamin Thomas	1875
Fairchild, Samuel William	1887
Feinberg, Maurice Mandel	1905
Ferguson, George A	1905
Flowers, Hiland	1904
Fraser, Horatio Nelson	1888
Gable, Ralph Benton	1902
Gane, Eustace Harold	1895
GARDNER, ROBERT WINSLOW	1867
Geisler, Joseph Frank	1889
Geisler, Leo Waldemar, Jr	1904
Green, Edward T.	1905
Gregorius, George Gustavus Chas. Wm.	1898
Haddad, Saleem Faris	1902
Harris, Norman B	1904
Harson, Henry	1906
Hatcher, Robert Anthony	1905
Hauenstein, William	1883
Haynes, David Oliphant	1887
Hays, Francis Banks	1902
Henning, Adolph	1905
HEYDENREICH, EMILE	1867
Hitchcock, George Henry	1902
Hopkins, Jesse L.	1898
Hudnut, Richard Alexander	1899
Jelliffe, Smith Ely	1895
Jungmann, Julius	1879
Kalish, Julius	1875
Kalish, Oscar G.	1900
Keenan, Thomas John	1894
Kemp, Edward	1903
Kennedy, Ezra Joseph	1887
Kent, Robert Restieaux	1855
Kirchgasser, William Charles	1888
Lampa, Robert Raymond	1892
Lascoff, Jacob Leon	1903
Lovis, Henry Christian	1892
MAIN, THOMAS FRANCIS	1872
Mariamson, Max	1902
Mayo, Caswell Armstrong	1893
McIntyre, Ewen	1873
McIntyre, Ewen, Jr	1903
McKesson Donald	1906
McKesson, George Clinton	1888
MCKESSON, JOHN, JR	1867
Molwitz, Ernst	1867
Murray, Benjamin Lindley	1896
Niece, Frederic Ellwood	1903
O'Neil, Henry Maurice	1879
Pennock, Edward	1898
Plaut, Albert	1894
Quackinbush, Benjamin Franklin	1886
RAMSPERGER, GUSTAVUS	1860
Robinson, William Josephus Marir	1902
RUNYON, EDWARD WHEELOCK	1875
Rusby, Henry Hurd	1890
Salem, Louis Napoleon	1905
Sawyer, Edward Sands	1904
Schenck, Henry	1903
Schieffelin, William J	1892
Schimpf, Henry William	1894
Schleussner, Charles Frederick	1902
Schmid, Henry	1887
Schnell, Harry Julius	1906
SEABURY, GEORGE JOHN	1876
Sheridan, William Franklin	1904
SKELLY, JAMES JOSEPH	1866
Stephenson, John Joseph	1905
Swann, Samuel Van Buren	1903
Takamine, Jokichi	1898
Weicker, Theodore	1905
Weinstein, Abraham	1904
Weinstein, Joseph	1905
White, Charles Hugh	1902
Wichelns, Frederick	1881
WICKHAM, WILLIAM HULL	1870

Plattsburg.

Hitchcock, John E.	1892

Port Richmond.

Kerr, Frederick William	1905

Richfield Springs.

Smith, Willard Alfred	1880

Saratoga Springs.

FISH, CHARLES FREDERICK	1866

Stapleton, Staten Island.

Becker, Ulrich William 1904
Roehrig, Albert Michael 1902
Rogers, Edward 1902

Syracuse.

Dawson, Edward Seymour, Jr 1876
Muench, William 1899
Snow, Charles Wesley 1876

Utica.

Blaikie, William 1879
Watson, William, Jr 1902

Yonkers.

Petsche, Franz Fried. Bismarck Wilhelm . 1892

NORTH CAROLINA.

Asheville.

Pfafflin, Henry Adolph 1892
Smith, Whitefoord Gamewell 1892

Chapel Hill

Howell, Edward Vernon 1900

China Grove.

Swaringen, DeWitt Clinton 1905

Durham, Orange Co.

Vaughan, Parry Wyche 1882

Fayetteville.

Horne, Warren Winslow 1902

Morganton.

Leslie, William Augustus 1902

New Bern.

Bradham, Caleb Davis 1902

Rowland.

Ward, Homer Benjamin 1901

Sanford.

Reid, William Watts 1906

Scotland Neck.

Whitehead, Eugene Thomas 1900

Smithfield.

Hood, William Dameron 1905

Snow Hill.

Walker, Emmett Edward 1900

Tarboro.

ZOELLER, EDWARD VICTOR 1878

Williamston.

Biggs, Warren H 1905

Wilmington.

Holt, Edwin Merrimon 1902

NORTH DAKOTA.

Devil's Lake.

Hodgkinson, Albert Edgar 1903

Fargo.

Wilser, Joseph Michael Stephen 1906

Grafton.

Haussamen, Henry Louis 1906

Kathryn.

Simmons, Gustav Tobias 1903

Willow City.

Baillie, Frederick Daniel 1904

OHIO.

Ada.

Mohler, David Christian 1906

Akron.

Collins, Frank Askew 1904
Dutt, William 1905
Harper, Charles Bennett 1904
Lemasters, William Otterbein 1905

Ashtabula.

Allen, Andrew Campbell 1905

Barnesville.

Ely, Ernest Sykes 1904

Bellevue.

Brinker, John Henry 1906
Hale, Frank P 1906

Canton.

Jones, Ernest 1905
Roth, Charles Robert 1900
Schlabach, Edward John 1904

Chardon.

Gape, Arthur Garfield 1904

Chillicothe.

Howson, Arthur Bayshawe 1886

Cincinnati.

Apmeyer, Charles Ascau 1906

Brand, Joseph Henry	1904
DeLang, Alfred	1887
Fennel, Charles Theodore Piderit	1886
Fieber, Gustavus Adolphus	1893
Forbes, James Winchell	1905
Freericks, Frank Herman	1905
French, Rolland Hall	1903
Gansz, William Henry	1905
Gordon, William John Maclester	1854
Greyer, Julius	1880
Katz, Otto	1904
Kisker, Frederick William	1906
Kistner, Otto Emil	1906
Kutchbauch, John Frederick	1904
LLOYD, JOHN URI	1870
Lutterman, Louis August	1904
Merrell, Charles George	1888
Merrell, George	1879
Overbeck, Bernard Henry, Jr	1906
Serodino, Herman	1880
Voss, Edward, Jr	1904
Wetterstroem, Albert Frederick Charles	1888
Wetterstroem, Theodore David	1897
YORSTON, MATTHEW MACKAY	1864
Zorn, Emil	1904
Zuenkeler, John Ferdinand	1887
Zwick, Albert Otto	1904

Circleville.

Fickardt, Frederick Lutz	1904

Cleveland.

Arny, Harry Vin	1891
Bechberger, Henry	1904
Beckenbach, Edward	1904
Benfield, Charles William	1893
Boldt, Frederick William	1905
Brown, Charles Malvern	1902
Cobb, Ralph Lathrop	1883
Drach, George Louis	1902
Drake, Wallace Clinton	1902
Feil, Joseph	1885
Fischer, Henry John	1902
Fox, Willard Milton	1903
Gausby, Robert Arthur	1904
Gehrung, John Michael	1905
Haake, William Henry	1893
Hankey, William Tabor	1902
Hannan, Owen Burdette	1893
Hechler, Edward Henry	1904
Hopp, Lewis Christopher	1876
Krause, John	1906
Kuder, William Frank	1893
Lehr, Philip	1885
Matousek, James Thomas	1905
McDonald, Walter David	1905
Miller, Frederick John	1902
Mitermiler, John Alfred	1903
Muhlhan, Otto Emil	1905
Neuberger, Joseph Anton	1904
Oertel, Alfred Augustus	1903
Placak, Harry	1902
Pratt, Thomas Matthew	1906
Schellentrager, Ernst August	1906
Schmitt, Carl	1906
Schoenhut, Christian Henry	1888
Selzer, Eugene Reinhold	1893
Sherwood, Henry Jackson	1894
Sieplin, Charles Augustus	1904
Sords, Thomas Vincent	1893
Southard, Frank Allan	1903
Stern, August Otto	1904
Tielke, Maxwell Gustave	1904
Voss, George William	1885

Columbiana.

Ink, Charles Eliott	1885

Columbus.

Ackerman, Philip Jacob	1906
Dye, Clair Albert	1901
Haney, Thomas Carlyle	1903
Hatton, Edgar Melville	1878
Hatton, Ellmore Wright	1894
Herpich, John Le Dure	1906
Kaemmerer, William Frederick	1899
Kauffman, George Beecher	1882
MATSON, GEORGE HIRAM, JR	1869
Ogier, William Robert	1901
Rauschkolb, John	1894
Sauerbrun, Otto Orville	1905
Schueller, Frederick William	1880
Webb, Edward Nathan	1905
Wendt, William Carl	1901

Conneaut, Ashtabula Co.

Dexter, Thomas Harold	1905
Symonds, Arthur Henry	1892

Dayton.

Nipgen, Frank M	1904

Delphos.

Ford, Myron Nile	1905

Demos.

Mayhew, Earle William 1905

Dennison.

Lanning, Adrian Roy 1904

Dresden.

Nicholson, Ralph Burt 1905

East Liverpool.

Holloway, Jesse Daniel 1905

Grand Rapids, Wood Co.

Thurston, Azor 1886

Hillsboro.

Garrett, Oscar Newton 1902

Holloway.

Murphy, Charles Corliss 1904

Hopedale.

Stringer, Orum Hines 1905

Logan.

Harrington, Frank 1869

Magnolia.

McIlravy, Maude Jeanette 1903

Martinsburg.

Breece, Charles Amos 1905

Massilon.

Baltzly, Zachariah Taylor 1905

Mingo Junction.

Bryson, William Smith 1905

Navarre.

GROSSKLAUSS, JOHN FERDINAND 1859

Norwood.

Bunnell, Lynn Lester 1906

Painesville.

Austin, William Carey 1904

Pomeroy.

Roush, Frederick Alman 1905

Ripley.

Crook, Frank Richards 1905

Scio.

Beal, James Hartley 1892
Creighton, Mary Louisa 1903
Seymour, James 1903

Springfield.

CASPER, THOMAS JEFFERSON 1867
Siegenthaler, Harvey Newton 1882

Strasburg.

Stanbarger, Morris Howard 1906

Toledo.

Bowman, Waldo Moffett 1905
Huston, Thomas Benton 1904
Loesser, Paul A. 1906
Ludwig, William Edward 1904
Rex, Clarence R. 1905

Upper Sandusky.

Von Stein, John Henry 1904

Washington.

Warfield, James Allen 1905

Wooster.

OHLIGER, LOUIS PHILIP 1871

Youngstown.

Cassaday, Orlin Ulysses 1899

OKLAHOMA.

Carnegie.

Bailey, William Edgar 1906
Whittet, James 1905

Geary.

Neal, Thomas Lindsey 1904

Granite.

Davenport, Emett Henry 1905

Guthrie.

Lillie, Foress Ball 1900
Spangler, Newton Light 1906

Hennesey.

Dinkler, Frank A. 1900

Lexington.

Johnston, George Pembroke 1905

Norman.

De Barr, Edwin 1905
Washburn, Homer Charles 1905

Seiling.

Daniels, Wilbur Wellington 1905

Shawnee.

Clark, Arthur Benjamin 1906
Remington, John Marvin 1904

Stroud.

Burton, John Clement 1902

OREGON.

Ashland, Jackson Co.

McNair, John Sydenham 1902

Marshfield.

Brown, James Lee 1903

Oregon City.

Huntley, Clyde Gibson 1904

Portland.

Laue, John Max Alfred 1904
Robertson, Felix Otey 1890

Salem.

Harbord, Kittie Walker 1905

The Dalles.

Blakeley, George Clarence 1892

PENNSYLVANIA.

Allegheny City.

Gleghorn, James Seymour 1900
Malloy, William Bernard 1905
Smith, Joseph Homer 1905

Beaver, Beaver Co.

Andriessen, Hugo 1875

Braddock.

Kutscher, George William 1905

Brownsville.

Graham, Charles Robert 1906
Risbeck, John Matthew 1905

Butler.

Boyd, Charles Newton 1900

Canonsburg.

Morron, George Shattuck 1905

Carlisle.

Horn, Wilbur Fisk 1876

Columbia.

Zeamer, Harry Wisler 1905

Connellsville.

Berryhill, Henry Pennick 1890
Hetzel, Chauncey Roy 1905

Corsica.

Scott, Henry Reyburn 1905

Crafton.

Holsopple, J. Bert 1905
Kossler, Herman G. 1905
McAteer, James William 1905

Du Bois.

Hay, Charles La Mar 1898

Duquesne.

Malloy, Michael J. 1905

Easton.

Anspach, Paul Bucher 1903
Voorhees, Harry Burns 1906

Edinburg.

Burke, Madge Adeline 1905

Edwardsdale.

Lohman, John 1904

Elkins Park.

Osborne, Melmoth Mercer 1906

Franklin.

McGarr, Cuvier Lee 1905

Freedom.

Gruen, John George 1906

Harrisburg.

GEORGE, CHARLES THEODORE 1873
Gorgas, George Albert 1884
Miller, Jacob Augustus 1873
Smith, Benjamin Franklin 1892

Harrisville.

Cochran, William Medardus 1906

Haverford.

Harbaugh, Wilson Linn 1896

Homestead.

Hantz, Charles Nelson 1906
Lebovitz, Louis 1905

Johnstown.

Griffith, Charles 1900
Griffith, James Arthur 1905

Lancaster.

Frailey, William Otterbein	1903
Heinitsh, Sigmund William	1889
Martin, David G.	1905

Langhorne.

HANCOCK, CHARLES WEST	1868

Latrobe.

Minesinger, Norman Wilhelm	1906

Lebanon.

LEMBERGER, JOSEPH LYON	1858
Redsecker, Jacob Henry	1881

Lititz.

Moyer, Lewis Nathan	1903

Manheim, Lancaster Co.

Ruhl, Harry Fry	1902

Mars.

Willets, Charles Ellsworth	1905

McKeesport.

West, Walter Lionel	1905

Media.

Meeker, George Herbert	1905

Mt. Joy, Lancaster Co.

Garber, Elmer Franklin Weaver	1901

Mount Pleasant.

Cummings, John A.	1905

Mt. Union.

Harper, Grace Irene	1905

New Castle.

Haley, John B.	1902
Wallace, John Crawford	1905

Norristown.

Reed, Willoughby Henry	1893

Ogontz.

Clayton, Abraham T.	1906

Philadelphia.

Apple, Franklin Muhlenberg	1905
Baer, Jacob Michael	1902
BAUER, LOUIS GUSTAVUS	1867
Bell, Robert Nevens	1905
Bonta, Clarence LaRue	1906
Borell, Henry Augustus	1874
BORING, EDWARD MCCURDY	1867
Burg, John Dellinger	1888
Burke, William Thompson	1906
Busch, Miers	1903
Cadmus, Robert Clark	1906
Cameron, Charles Sherwood	1906
Campbell, Milton	1902
Campbell, Theodore	1902
Carpenter, William A.	1906
Cliffe, William Lincoln	1898
Cook, Ernest Fullerton	1901
Crawford, Joseph	1903
Cuthbert, Richard Williams	1906
Egbert, Seneca	1905
Ellis, Evan Tyson	1857
England, Joseph Winters	1893
Eppstein, Jacob	1902
Evans, George Bryan	1902
Feidt, George David	1898
Finney, John Joseph	1906
Flack, Herbert Louis	1905
FOX, PETER PAUL	1869
French, Harry Banks	1890
French, Howard Barclay	1906
Gano, William Hubbell	1892
Graham, Willard	1902
Hance, Anthony Miskey	1902
HANCE, EDWARD HANCE	1857
Harbold, John Tilden	1905
Hassinger, Samuel Ellphat Reed	1880
Haussmann, Frederick William	1895
Haydock, Susannah Garrigues	1905
Heim, William Joseph	1902
Heintzelman, Joseph Augustus	1858
Hoch, Aquilla	1896
Hughes, Francis Stacker	1902
Hunsberger, Ambrose	1905
Kahn, Solomon Karl	1905
Kelley, John J.	1905
Kline, Clarence Mahlon	1902
Kline, Mahlon Norwood	1878
KRAEMER, HENRY	1892
Kraus, Otto	1906
Krewson, William Egbert	1875
LaWall, Charles Herbert	1896
Lawrence, George W.	1906
Lee, William Estell	1905
Leedom, Charles	1902
Long, John Nathan Grier	1906
Lowe, Clement Belton	1895
Marsden, Joshua Eugene	1906
Matusow, Harry	1897
McConomy, Paul Lucien	1906

McFerren, Jeremiah Dull	1906
McIntyre, William	1868
Mellor, Alfred	1864
Mentzer, Harvey H	1902
MILLER, ADOLPHUS WILLIAM	1868
MILLIGAN, DECATUR	1867
Minehart, John Roy	1905
Moerk, Frank Xavier	1898
Monaghan, Thomas Francis	1902
MOORE, JOACHIM BRICKLEY	1860
Morgan, Frank E	1906
MORRIS, LEMUEL IORWERTH	1880
Mulford, Henry Kendall	1896
Oetinger, Albert	1902
Oliver, Frank Murphy	1906
Osterlund, Otto William	1902
Ottinger, James Jeremiah	1876
Peacock, Bertha Leon (Mrs)	1895
Peacock, Josiah Comegys	1892
Pile, Gustavus	1881
Poley, Warren Henry	1906
Pollard, Augustus Torrey	1906
Potts, David Gardner	1893
Potts, Thomas Humphreys	1906
Reese, David John	1906
Remington, J. Percy	1901
REMINGTON, JOSEPH PRICE	1867
Renshaw, Millicent Saxon	1905
Riegel, Samuel Jacob	1905
Rosengarten, George David	1902
Russell, Hamilton	1905
Sadtler, Samuel Philip	1893
Shafer, Erwin Clement	1893
SHINN, JAMES THORNTON	1860
Shoemaker, Clayton French	1902
SHOEMAKER, RICHARD MARTIN	1865
Smith, Albert Henry	1902
Smith, Walter Valentine	1902
Stanislaus, Ignatius Valerius Stanley	1906
Stewart, Francis Edward	1884
Stroup, Freeman Preston	1900
Swain, Harry	1902
Thum, John Karl	1905
Toplis, William George	1905
Turner, Joseph L	1906
Warner, William Richard, Jr	1902
WEIDEMANN, CHARLES ALEXANDER	1868
Weidemann, George Buzby	1902
Wendel, Henry Edward	1873
White, Robert Charles	1906
Wiegand, Thomas Snowden	1857
Wilbert, Martin Inventius	1902
Wolcott, Abraham Lincoln	1903
Wood, Horatio C., Jr.	1906

Pittsburg.

Aron, Frank X	1905
Bell, William Ray	1906
Blank, Herman Gustave	1905
Blumenschein, Frederick John	1904
Dahlin, Horace Otto	1905
Darbaker, Lessure Kline	1905
Emanuel, Louis	1878
Engelsberg, Paul	1905
Fawcett, Charles Emerson	1905
Judd, Albert Floyd	1901
Koch, Julius Arnold	1892
McGovern, John Francis	1906
Muchnic, Adolph Morris	1905
Myers, Charles Joseph	1905
Patterson, Charles Meade	1905
Ringer, Charles Elmer	1905
Rodemoyer, William Edward	1901
Schaeffer, Emil August	1900
Siegfried, Henry J	1905
Smythe, William Raymond	1905
Soult, Roy Mont	1905
Thompson, John Reynolds	1905
Trust, Edward	1905
Voellger, Ernest Hugo	1905
Walter, Peter G	1905
Weil, Albert Joseph	1905
Wiegel, Carl George	1904

Plumville.

Green, James Blaine	1905

Pottsville.

Diebert, Thomas Irwin	1882

Rankin.

Hollander, Joseph Maurice	1905

Reading.

Stein, Jacob Henry	1902
Ziegler, Howard Philip	1905
ZIEGLER, PHILIP MILTON	1867

Rochester.

Patterson, Charles Meade	1905

Scranton.

Davis, Emma May	1905
Davis, George Warren	1905
Thomas, Daniel Judson	1905

Shenandoah.

Houck, Paul Winters	1905

Swissvale.

Johnson, Ralph Henry	1901

Towanda.

PORTER, HENRY CARROLL	1872

Uniontown.

Clark, Harry Scott	1905

Washington.

McConaughy, Thomas Singleton	1905
Vowell, Louis Sweitzer	1905

Waynesburg.

Hill, Frank Rush	1905

Wilkesbarre.

Nagle, Frederick Stanley	1904

Wilkinsburg.

Hall, Guy P.	1905

Williamsport.

Cornell, Edward Augustus	1873
Millener, William S.	1905
Smith, Edward W.	1902
Walton, Lucius Leedom	1904

Wilmerding.

Young, Harry Garfield	1905

York.

Leber, Jacob Gilbert	1905
Patton, John Franklin	1880

PHILIPPINE ISLANDS.

Camp McGrath.

Riess, Herman William	1903

Cebu.

McBride, Charles Robert	1904

Cotabato.

Barton, Willard Mortimer	1906

Jolo.

Askew, Alfred Joseph	1905

Manila.

Albert, Alejandro	1904
Comfort, Newton C.	1904
Guerrero, Leon Maria	1904

Mindanao.

Baigent, John T.	1906
Compton, Paul	1906
Maloney, Patrick Jarlath	1905

Pampanga.

Collins, John Lawrence	1906
Van Sickle, George Campbell	1906
Weber, Eugene	1906

Zamboanga.

Perry, Clifford Henry	1906

RHODE ISLAND.

Naragansett Pier.

Tobin, John Martin	1887

Newport.

Bristow, Thomas George	1904
Downing, Benjamin Franklin Jr.	1886
Pearson, Joseph Frederick	1897
Wood, John William	1897

Providence.

Blanding, William Oliver	1894
Crawford, Frank Eugene	1902
Greene, William Ray	1883
Lyon, George Calvin	1899
O'Hara, James	1888
Pearce, Howard Anthony	1894
Strickland, Franklin Nelson	1905

Westerly.

Collins, Albert Burlingame	1882

Woonsocket.

Jackson, Frank Anthony	1900
Simmons, Frank Birtles	1897

SOUTH CAROLINA.

Fort Fremont.

Galvin, Mathew	1906

Pelzer.

Bramblett, Oscar Eugene	1905

SOUTH DAKOTA.

Aberdeen.

Griffis, Orville A.	1906
Woodward, Albert A.	1906

Arlington.

Maxwell, Charles Coleman	1906

Burke, Gregory Co.

Fulton, Peter MacMullen 1902

Colton.

Arneson, Thomas 1906
Lowry, George Warren 1906

Dell Rapids.

Bent, Edward Clarence 1905

Lake Preston.

Keith, Irwin Alonzo 1906

Mitchell.

Scallin, Stephen H. 1906

Redfield.

Packard, Franklin Hiram 1904
Sabin, George C. 1906

Sioux Falls.

Dunning, Lyman Taylor 1906

Watertown.

Jones, David Franklin 1895

Yankton.

Brecht, Frederick Adolph 1895

TENNESSEE.

Chattanooga.

Voigt, Joseph Frederick 1893

Columbia.

Brashear, Owen Lee 1906

Knoxville.

Rosenthal, David Abraham 1894

Memphis.

O'Gorman, Theophilus Vincent 1897
ROBINSON, JAMES SCOTT 1869

Nashville.

Justice, J. Edwin 1906
McGill, John Thomas 1900
Ruddiman, Edsel Alexander 1894
White, William Rufus 1904

Sewanee.

Leiper, James Armstrong, Jr. 1904

Sharon.

Shannon, Thomas J. 1905

TEXAS.

Ballinger.

Hunter, Angus 1906

Brownsville.

Willman, William George 1904

Corsicana.

Coulson, James Thomas 1906

Dallas.

Chisholm, Jesse Connor 1906
Cormick, John W. 1906
Crawford, Claude Marcelle 1906
De Lorenzi, Albert 1890
Duncan, Chester Arthur 1906
Eberle, Eugene Gustavus 1896
Treadwell, William Pickens 1906

Denton.

Allison, Samuel Porter 1905

El Paso.

Noaks, Richard Sidney 1905
Weaber, John Alvin 1906

Fort Worth.

Needham, Robert Hamilton 1906
Whitsitt, Lee Melford 1905

Galveston.

Buckner, John Clark 1905
Cline, Raoul Réné Daniel 1898
Orton, Ingomar François 1891

Goldthwaite.

Oxford, Albert 1904

Hallettsville.

Saccar, Michael 1905

Houston.

Burgheim, Jacob 1892

Hughes Springs.

Glass, William Finis 1904

Jacksboro.

Groner, William Christopher, Jr. 1905

McKinney, Callin Co.

Dulaney, Joseph Field 1902

Paris.

Musselman, Claude J. 1906

San Antonio.

Schmitt, George Joseph Francis......1890

Stamford.

Cooper, Oscar Hamilton............1904
Miller, Mark Elias 1905

Sulphur Springs.

Smith, Ben. E. 1904

Taylor.

Thames, Joseph Jefferson 1895

Terrell.

Schrodt, Jacob 1903

Troupe.

McKay, Felix Early................1903

Velasco.

Roeller, Edward Frank 1902

Waelder, Gonzales Co.

Brookes, Virginia Cade 1901

UTAH.

Salt Lake City.

Coffman, Walter Thomas 1904
Irvine, Darwin William 1902

VERMONT.

Burlington.

Zottman, William Henry............1903

Montpelier.

Blakely, Collins...................1899
Slade, Henry Allen.................1899
Terrill, Willis Ethel...............1899

St. Johnsbury.

Bingham, Charles Calvin............1875

VIRGINIA.

Barton Heights.

Miller, Roshier W..................1906

Charlotte C. H.

Williams, Walter Gregory...........1905

Culpepper.

Goldsborough, Charles Henry.......1898

Danville.

Hagan, John Lyle..................1905

Harrisonburg.

Avis, James Little.................1905

Newport News.

Congdon, George Gardner..........1903
Klor, Alexander Edward George.....1899

Norfolk.

Martin, William Rogers.............1905

Richmond.

Brandis, Ernest Linwood...........1906
Briggs, Andrew Gessner............1890
Harrison, Robert Lucius............1900
Miller, Turner Ashby...............1894
Scott, William Henry 1873

Roanoke.

Barnes, Henry Cooper 1905

Suffolk.

Hall, Joseph Patten................1900

WASHINGTON.

Fort Ward.

England, Thomas M................1905

La Conner, Skagit Co.

Joergensen, Gerhard Johan Carl Sophus.1889

Port Townsend.

Allen, Grafton Cleveland 1902
Troxler, Robert Fulton.............1902

Pullman.

Watt, George Henry................1896

Puyallup.

Scott, Walter Robert...............1904
Truedson, Eric Per.................1904

Seattle.

Aschermann, Gustav Singer.........1905
Brandel, Irvin Walter 1903
Holmes, Henry Elliott..............1880
Johnson, Charles Willis 1903
Lough, Thomas Warner.............1905
Osseward, Cornelius................1897
Watson, Joseph Ryerson.... 1904

Snohomish.

Wilbur, Lot.......................1896

Spokane.

Bradley, Linn.... 1904
McArthur, James W.................1904

Tacoma.

Gamer, Albert Charles C. 1902
Walker, Charles Henry 1904

Walla Walla.

Tallman, Lewis Lifferty 1904

Wilbur.

Bandy, George 1905

WEST VIRGINIA.

Bluefield.

Crouch, William Tazewell 1906

Cameron.

Hill, William Gibson Clark 1905

Clarksburg.

Haymaker, Frank Berkshire 1906

Colliers.

Robinson, Henry Sherman 1905

Farmington.

Moran, William Patrick 1905

Littleton.

Carney, Frank 1905

Moundsville.

Gray, Will Wesley 1905

New Martinsville.

Keyser, George Francis 1905

Parkersburg.

Brown, Edward Preston 1906

Philippi.

Mason, Wm. Lindsey 1905

Sutton.

Walker, Alfred 1905

Wheeling.

Coleman, John 1905
Gordon, William C 1905

WISCONSIN.

Eau Claire.

Boberg, Otto Johan Sinius 1903

La Crosse.

Beyschlag, Charles 1880

Madison.

Fischer, Richard 1901
Kremers, Edward 1887
Sievers, Arthur 1906
Williams, Edward 1906

Milwaukee.

Brundage, Albert Harrison 1892
Dadd, Robert Morrow 1896
DRAKE, JOHN RANSOM 1860
Janssen, Jacob Solomon 1903
Kettler, Edward, Jr 1896
Krembs, Ernest Maximilian 1903
Mieding, Albert Edward 1903
Raeuber, Edward Gottfried 1900
Ruenzel, Henry Gottlieb 1892
Schrank, Charles Henry 1876
Spiegel, Adolph 1905

Neillsville.

Sniteman, Charles Clarence 1881

Oconomowoc.

Peters, Henry August 1903

Racine.

Horlick, Alexander James 1904

Watertown.

Eberle, Herman Theodore 1901

DOMINION OF CANADA.

MANITOBA.

Stonewall.

Leonard, Alexander Robert 1904

Winnipeg.

Bletcher, Henry Ernest John 1904

NEW BRUNSWICK.

St. John.

Paddock, Morris Venner 1902

NOVA SCOTIA.

Halifax.

Simson, Francis Cook 1876

ONTARIO.

Guelph.

Stewart, Alexander 1905

Hamilton.

Clark, John Alexander 1890

Ottawa.

SAUNDERS, WILLIAM 1860

Sarnia.

Geary, Richard Thomas 1904

Stratford.

WAUGH, GEORGE JAMES 1862

Toronto.

Hargreaves, John 1904
Heebner, Charles Frederick 1894

Windsor.

D'Avignon, John Eugene 1888

QUEBEC.

Montreal.

Lachance, Seraphin 1888
Morrison, Joseph Edward 1888

Quebec.

Willis, Henry 1897

Three Rivers.

Williams, Richard Wellington 1883

MEMBERS RESIDING IN FOREIGN COUNTRIES (*except Canada*).

Bernström, Nils Gustaf, Stockholm, Sweden 1906
Hallaway, Robert Railton, Carlisle, England 1905
Heyl, James Bell, Hamilton, Bermuda 1863
Martin, Nicholas Henry, Gateshead-on-Tyne, England 1891
McLarty, Colin, Yokohama, Japan 1898
Murray, Alexander, San José de Costa Rica 1903
Neil, John Gerrie, Dunedin, New Zealand 1905
Patch, James Alfred, Beirût, Syria 1903
Pirie, Alfred Mitchell, Cartago, Costa Rica 1903
POWER, FREDERICK BELDING, London, England 1872
WELLCOME, HENRY SOLOMON, London, England 1875

MEMBERS WHOSE RESIDENCE IS UNKNOWN.

Bailey, Leon 1904
Bartmer, Adolph Henry 1901
Burdsal, Albert Howard 1904
King, Robert Bruce 1901
Lord, Frederic W 1905
McCormick, Louis Carleton 1903
Schmitt, Walter 1904
Stearns, William Lincoln 1903

NOTE.—Names of life members whose residence has been unknown for five consecutive years, are no longer published in the above list, in accordance with the action of the Council approved at the forty-eighth annual meeting. (See Proceedings, 1900, p. 18.)

ALPHABETICAL LIST OF MEMBERS.

HONORARY MEMBERS.

Attfield, Dr. John, F. R. S., Watford, England.

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Ince, Joseph, F. L. S., Glenholme, 13 Alfred Road, Acton, W., London, England.

Martenson, Staatsrath J. von, Kinderhospital des Prinzen von Oldenburg, St. Petersburg, Russia.

Schaer, Dr. Edward, Professor of Pharmacy, Pharmaceutisches Institut der Universität, Strassburg, Germany.

Schmidt, Professor Dr. Ernst, Geh. Regierungsrath, Marburg, Germany.

ACTIVE MEMBERS.

Members are requested to notify the General Secretary of errors or inaccuracies in the following list. The Association will not replace volumes of Proceedings lost through changes of residence of which the General Secretary has not been notified. See Proceedings, 1866, p. 66.

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Abernethy, Maxwell,
22 Brinkerhoff st., Jersey City, N. J.
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Cobb, Ralph L.,
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St. Augustine, Fla.
Woodruff, Roderick S.,
92 Prospect st., Waterbury, Conn.
Woodward, Albert A.,
Aberdeen, S. D.
Woodworth, Benjamin S.,
1002 W. Wayne st., Ft. Wayne, Ind.
Woodworth, Charles B.,
254 W. Wayne st., Fort Wayne, Ind.
Wooten, Thomas V.,
79 Dearborn st., Chicago, Ill.
Wrensch, Henry E., Jr.,
610 Bloomfield ave., Montclair, N. J.
Wright, Charles L.,
Allen & Dougherty sts., Webb City, Mo.
Wuensch, Charles,
494 Springfield ave., Newark, N. J.
Wulling, Frederick J.,
Minn. University, Minneapolis, Minn.
Wunderlich, Edward,
1415 Dryades st., New Orleans, La.
Wyckoff, Elmer E.,
238 East 5th st., Brooklyn, N. Y.
Yeomans, Sidney C.,
3360 State st., Chicago, Ill.
YORSTON, MATTHEW M.,
1063 Central ave., Cincinnati, O.
Young, Harry G.,
346 Marguerite ave., Wilmerding, Pa.
Zabaldano, Alexander,
1124 Stockton st., San Francisco, Cal.
Zamentowsky, David,
1423 Michigan ave., Chicago, Ill.
Zeamer, Henry W.,
240 Locust st., Columbia, Pa.
Zelinski, Walter F. von,
438 W. Madison st., Chicago, Ill.
Ziegler, Howard P.,
201 Windsor st., Reading, Pa.
ZIEGLER, PHILIP M.,
526 Penn st., Reading, Pa.
ZOELLER, EDWARD V.,
Main st., Tarboro, N. C.
Zorn, Emil,
12th & Elm sts., Cincinnati, O.
Zottman, William H.,
1 Church st., Burlington, Vt.
Zuber, A. E.,
5108 Wentworth ave., Chicago, Ill.
Zuenkeler, J. Ferd.,
1902 Vine st., Cincinnati, O.
Zurawski, Narcyz J.,
4800 Loomis st., Chicago, Ill.
Zwick, Albert O.,
19 W. 7th st., Cincinnati, O.
Zwick, Karl G.,
1102 Madison ave., Covington, Ky.

LIST OF MEMBERS WHO HAVE RESIGNED SINCE PUBLICATION OF THE LAST REPORT.

		Elected.
Bollinger, George,	Chicago, Ill.,	1905
Claybaugh, Springer,	Uniontown, Pa.,	1904
Crain, Z. A.,	Redfield, S. D.,	1904
Doehne, George, Jr.,	Lewiston, Ida.,	1904
Egge, Julius K.,	Newark, N. J.,	1905
Engel, Carl,	Manhattan, Kan.,	1904
Famulener, Lemuel W.,	Detroit, Mich.,	1902
Flynn, Cornelius P.,	Boston, Mass.,	1904
Frerichs, Frederick W.,	St. Louis, Mo.,	1901
Gale, Abram,	Chicago, Ill.,	1906
Glick, Harry E.,	Lafayette, Ind.,	1900

		Elected.
Gordon, Jean (Miss),	Chicago, Ill.,	1902
Gram, William J. B.,	Chicago, Ill.,	1906
Hall, Edwin B.,	Wellsville, N. Y.,	1879
Harvey, George A.,	Little Rock, Ark.,	1903
Hayter, John P.,	Decatur, Tex.,	1905
Henry, Charles (Dworniczak),	Croton-on-Hudson, N. Y.	1881
Hetzel, Philip W.,	Connellsville, Pa.,	1905
Keeling, Francis, Jr.,	Chicago, Ill.,	1906
Levy, Adolph,	Brooklyn, N. Y.,	1877
Macnair, Whitmel H.,	Tarboro, N. C.,	1898
Mente, Alvin W.,	Kansas City, Mo.,	1901
Parmalee, Walter W.,	Burlington, Vt.,	1901
Schiemann, Edward B.,	Louisville, Ky.,	1880
Schmidt, Ferdinand T.,	Brooklyn, N. Y.,	1886
Schnakenberg, Karl,	New York City, N. Y.,	1904
Smith, J. Schall,	York, Pa.,	1903
Stierle, John G.,	Dayton, O.,	1904
Stowell, Daniel,	Boston, Mass.,	1875
Van Winkle, Abraham,	Newark, N. J.,	1871
Wall, Otto A., Jr.,	St. Louis, Mo.,	1903
West, Courtney H.,	St. Louis, Mo.,	1902
Whitney, Edgar F.,	Warren, Minn.,	1897
Woodland, Edward E.,	Philadelphia, Pa.,	1905
Woolsey, Jesse F.,	Indianapolis, Ind.,	1903
Wurmb, Theodore H.,	St. Louis, Mo.,	1890

LIST OF MEMBERS WHO HAVE DIED SINCE PUBLICATION OF LAST REPORT.

		Elected.
Achenbach, John F.,	Port Townsend, Wash.,	1904
Baker, T. Roberts,	Richmond, Va.,	1856
Blank, Alois,	St. Louis, Mo.,	1881
Blumauer, Louis,	Portland, Ore.,	1889
Burkhardt, Mark A.,	Dayton, O.,	1887
Butler, Charles H.,	Oswego, N. Y.,	1887
Butler, Freeman H.,	Lowell, Mass.,	1874
Calvert, John,	San Francisco, Cal.,	1870
Dunn, Joseph H.,	New Orleans, La.	1903
Dutcher, Alfred L.,	St. Albans, Vt.,	1892
EBERT, ALBERT E.,	Chicago, Ill.,	1864
Elder, Herbert P.,	Woodland, Cal.,	1903
Hamrick, Charles B.,	Meridian, Miss.,	1905
Hopkins, Zerah B.,	Brandon, Vt.,	1900
Koch, Louis,	Philadelphia, Pa.,	1872
LEE, JAMES A.,	New Iberia, La.,	1856
May, Edward,	Norfolk, Va.,	1897
Moith, Augustus T.,	Fishkill, N. Y.,	1860
Ogier, John M.,	Cambridge, O.,	1895
ORNE, JOEL S.,	Cambridgeport, Mass.,	1859
Pierce, Horace C.,	Barton, Vt.,	1904

		Elected.
Reidy, Michael,	Corunna, Mich.,	1894
Ruppert, John,	Cincinnati, O.,	1880
Stearns, Frederick,	Detroit, Mich.,	1897
Thompson, Wm. B.,	Philadelphia, Pa.,	1858
Tilden, Amos K.,	Boston, Mass.	1892
Ward, Chas. E.,	Denver, Colo.,	1904
Watson, Sidney P.,	Atlanta, Ga.,	1887
Wolf, Henry A.,	St. Louis, Mo.,	1901

LIST OF MEMBERS DROPPED FROM THE ROLL FOR NON-PAYMENT OF DUES ACCORDING TO ARTICLE III, CHAPTER VII, OF THE BY-LAWS.

(PUBLISHED IN ACCORDANCE WITH A GENERAL RULE ADOPTED AT MONTREAL, CAN., AUGUST, 1896. SEE PAGE 17, VOL. 44, PROCEEDINGS.)

		Elected
Adams, Frank M.,	Forney, Tex.,	1903
Ambrose, Olney A.,	St. Louis, Mo.,	1903
Augermueller, William F.,	St. Louis, Mo.,	1903
Aquaro, Joseph,	New York, N. Y.,	1900
Baert, George H.,	Grand Rapids, Mich.,	1903
Balkcom, Victor F.,	Tallahassee, Florida,	1903
Barth, George F.,	North Alton, Ills.,	1896
Battle, Orrin McR.,	Hope, Ark.,	1902
Bauer, Jonathan M.,	Cleveland, O.,	1903
Bausch, Oscar F.,	St. Louis, Mo.,	1903
Benson, John M.,	Richmond, Va.,	1903
Berry, Robert H.,	Cynthiana, Ky.,	1903
Billetdoux, Chester A.,	Philadelphia, Pa.,	1903
Boyd, Guy S.,	York, Pa.,	1903
Brewer, Justin S.,	Hoboken, N. J.,	1903
Buchanan, Clark G.,	Wellsburg, W. Va.,	1903
Burns, Edwin M.,	Mason City, Ia.,	1897
Capbern, Andrew E.,	White Castle, La.,	1903
Carl-Lee, Reuben B.,	England, Ark.,	1903
Cary, Silas B.,	Kansas City, Mo.,	1903
Casalius, Tsidro,	Tampa, Fla.,	1903
Chipman, Gilbert S.,	Cambridge, Mass.,	1903
Chittick, Justus R.,	Des Moines, Ia.,	1903
Cookson, Joseph W.,	Kingman, Kan.,	1902
Cox, Daniel R.,	Tallahassee, Fla.,	1903
Crum, John D.,	Jacksonville, Fla.,	1892
Daly, James E.,	Residence Unknown,	1902
Darby, Edmund F.,	Harrow, Ont., Can.,	1903
Dillon, William E.,	Detroit, Mich.,	1903
Dodson, James G.,	Americus, Ga.,	1903
Doersam, Philip, Jr.,	Scranton, Pa.,	1903
Donnel, Cornelius P.,	Philadelphia, Pa.,	1902
Dorsheimer, George V.,	Des Moines, Ia.,	1903
Downing, Ernest A.,	Des Moines, Ia.,	1903

		Elected.
Drechsler, Frank X.,	St. Paul, Minn.,	1902
Eaton, Harry E.,	Essex, Ia.,	1902
Eaton, Harvey K.,	New York, N. Y.,	1902
Einstein, Morris,	Allegheny City, Pa.,	1900
Elderdice, William J.,	Cumberland, Md.,	1902
English, George E.,	Cleveland, O.,	1903
Firth, Samuel S.,	Cleveland, O.,	1903
Ford, Edgar F.,	Pueblo, Colo.,	1902
Gilbert, Robert B.,	Greenville, Ga.,	1902
Grauel, Otto H.,	Norfolk, Neb.,	1903
Gross, Edward Z.,	Harrisburg, Pa.,	1883
Hamilton, Clarence B.,	Longview, Tex.,	1903
Hardin, John H.,	Wilmington, N. C.,	1881
Hardman, Lamartine G.,	Commerce, Ga.,	1903
Harper, Harry L.,	Beatrice, Neb.,	1903
Harris, Francis M.,	Worcester, Mass.,	1894
Hazlett, James L.,	Hearne, Tex.,	1900
Heath, George M.,	Big Rapids, Mich.,	1903
Henry, W. P.,	Des Moines, Ia.,	1903
Herold, Lodimir,	Cleveland, O.,	1903
Higgins, Edward A.,	Des Moines, Ia.,	1903
Hoffmann, Herman,	Houston, Tex.,	1902
Howe, J. William,	Hamilton, O.,	1904
Jeffers, Clyde N.,	Yukon, Okla.,	1903
Johnson, Ambrose,	Jacksonville, Tex.,	1903
Johnson, Fletcher V.,	St. Louis, Mo.,	1903
Jorgenson, Hans C.,	Washington, D. C.,	1899
Kahn, Harry,	Chicago, Ills.,	1903
Kendall, John L.,	Omaha, Neb.,	1903
Kerr, William W.,	Fullerton, Cal.,	1887
Kinney, Charles N.,	Des Moines, Ia.,	1901
Lamont, William H.,	St. Louis, Mo.,	1903
Lawson, Charles E.,	Kansas City, Mo.,	1903
Lester, Leon G.,	St. Louis, Mo.,	1903
Liersch, Clemens,	Kansas City, Mo.,	1903
Lyon, Arthur G.,	Coldwater, Mich.,	1903
Maass, William F.,	Brooklyn, N. Y.,	1903
Martin, James,	Reyno, Ark.,	1903
Martin, John C.,	Washington, D. C.,	1883
Matthews, Loderick,	Miami, Ind. Terr.,	1903
McCrary, Walter H.,	Jeffersonville, Ga.,	1903
Metz, Abraham L.,	New Orleans, La.,	1887
Michalek, John,	Chicago Heights, Ills.,	1900
Montgomery, Harriet E.,	Residence Unknown,	1903
Neville, William R.,	Austin, Tex.,	1901
Quintanal, Fernandez B. J.,	Tampa, Fla.,	1903
Reade, Frank M.,	Richmond, Va.,	1900
Riggio, Joseph,	Tampa, Fla.,	1903
Roesch, Anton,	Chicago, Ills.,	1901
Rogg, Charles W.,	Des Moines, Ia.,	1903
Rowell, Samuel J.,	Excelsior Springs, Mo.,	1903

		Elected.
Ryerson, Maurice W.,	Omaha, Neb.,	1903
Sauerhering, Edward,	Mayville, Wis.,	1903
Scarboro, Turner A.,	Lyons, Ga.,	1903
Semple, Henry B., Jr.,	Easton, Pa.,	1903
Settle, James A.,	Yukon, Okla.,	1903
Shrader, William E.,	Iowa City, Ia.,	1902
Siebe, Henri O.,	Hattiesburg, Miss.,	1903
Sills, Fred. W.,	Chicago, Ills.,	1903
Simenstad, Martin O.,	Edmore, N. D.,	1903
Sims, Henry U.,	Longview, Tex.,	1903
Small, Herbert E.,	Boston, Mass.,	1901
Smith, Edward J.,	San Francisco, Cal.,	1903
Smith, J. Stovall,	Brunswick, Ga.	1903
Smith, Oliver V. R.,	Des Moines, Ia.,	1903
Speissegger, Walter L.,	Charleston, S. C.,	1902
Sprissler, Clara,	Philadelphia, Pa ,	1902
St. Jacques, Gaston,	St. Hyacinthe, Que., Can.,	1900
Sterett, Walter B.,	Joplin, Mo.,	1903
Stockton, Robert C.,	Richmond, Ky.,	1903
Stuart, William A.,	Baltimore, Md.,	1898
Tontz, George W.,	St. Louis, Mo.,	1901
Trolinger, Ernest F.,	Bell Buckle, Tenn.,	1903
Turnquist, Carl M.,	Chicago, Ills.,	1901
Ulch, James J.,	Des Moines, Ia.,	1903
Vitt, Rudolph S.,	St. Louis, Mo.,	1895
Walker, Alfred L.,	Detroit, Mich.,	1903
Walling, Rufus O.,	Keyport, N. J.,	1903
Ward, Charles A.,	Stoneham, Mass.,	1891
White, Herbert E.,	Jamestown, N. Dak.,	1897
White, Howell Cobb,	Hawkinsville, Ga.,	1903
Wolff, Gustave,	New York, N. Y.,	1903
Woods, Charles H. A.,	Chicago, Ills.,	1897
Zinn, Charles E.,	Kansas City, Mo.,	1903

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